

November 2016

### BD2SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

#### Cell Description

BD2SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

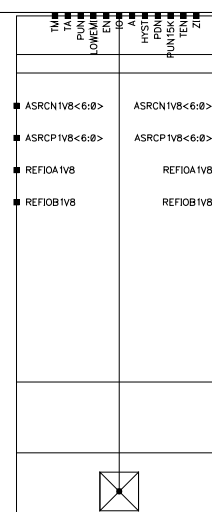
#### Physical Dimensions

Area(um2) : 4252.000

#### Glossary

Tr : Input Transition time  
 C : Output (capacitive) load  
 R : Rising edge  
 F : Falling edge

#### Logical Symbol



#### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA

-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261

PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$

R-1	$0.416 + 0.249 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$0.591 + 0.287 \cdot \text{Tr} + 0.079 \cdot \text{C}$	$0.877 + 0.324 \cdot \text{Tr} + 0.162 \cdot \text{C}$
F-0	$0.418 + 0.100 \cdot \text{Tr} + 0.149 \cdot \text{C}$	$0.623 + 0.143 \cdot \text{Tr} + 0.191 \cdot \text{C}$	$0.952 + 0.202 \cdot \text{Tr} + 0.292 \cdot \text{C}$
R-0	$0.406 + 0.032 \cdot \text{Tr} + 0.077 \cdot \text{C}$	$0.597 + 0.058 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.886 + 0.102 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM)</b>			
F-101	$1.427 + 0.191 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.544 + 0.212 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.874 + 0.245 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-101	$3.751 + 0.037 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.131 + 0.078 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.924 + 0.119 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-001	$0.984 + 0.183 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.681 + 0.217 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.137 + 0.236 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-001	$2.848 + 0.039 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.337 + 0.081 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.385 + 0.124 \cdot \text{Tr} + 0.292 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM)</b>			
HZ-01	$0.535 + 0.135 \cdot \text{Tr}$	$0.810 + 0.197 \cdot \text{Tr}$	$1.376 + 0.252 \cdot \text{Tr}$
LZ-01	$0.442 + 0.136 \cdot \text{Tr}$	$0.682 + 0.193 \cdot \text{Tr}$	$1.175 + 0.252 \cdot \text{Tr}$
HZ-11	$0.536 + 0.133 \cdot \text{Tr}$	$0.811 + 0.195 \cdot \text{Tr}$	$1.374 + 0.251 \cdot \text{Tr}$
LZ-11	$0.442 + 0.135 \cdot \text{Tr}$	$0.682 + 0.193 \cdot \text{Tr}$	$1.176 + 0.252 \cdot \text{Tr}$
ZH-01	$2.897 + 0.204 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.428 + 0.242 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.552 + 0.333 \cdot \text{Tr} + 0.293 \cdot \text{C}$
ZL-01	$1.027 + 0.185 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.749 + 0.244 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.262 + 0.284 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-11	$3.825 + 0.195 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.283 + 0.209 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.191 + 0.355 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-11	$1.491 + 0.200 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.655 + 0.246 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.101 + 0.276 \cdot \text{Tr} + 0.534 \cdot \text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN)</b>			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN)</b>			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

**Transition Time**

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM)</b>			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$

<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot Tr + 0.050^{\circ}C$	$1.598 - 0.002 \cdot Tr + 0.083^{\circ}C$	$3.166 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-10	$0.192 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.340 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.680 - 0.005 \cdot Tr + 0.429^{\circ}C$
ZH-00	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.007 \cdot Tr + 0.146^{\circ}C$
ZL-00	$0.088 + 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.001 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.005 + 0.101^{\circ}C$	$0.007 + 0.149^{\circ}C$	$0.011 + 0.233^{\circ}C$
R-1	$0.004 + 0.056^{\circ}C$	$0.006 + 0.089^{\circ}C$	$0.010 + 0.146^{\circ}C$
F-0	$0.005 + 0.101^{\circ}C$	$0.007 + 0.148^{\circ}C$	$0.011 + 0.232^{\circ}C$
R-0	$0.004 + 0.056^{\circ}C$	$0.006 + 0.089^{\circ}C$	$0.010 + 0.147^{\circ}C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$0.185 + 0.004 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.005 \cdot Tr + 0.242^{\circ}C$	$0.652 + 0.003 \cdot Tr + 0.430^{\circ}C$
R-101	$0.871 - 0.002 \cdot Tr + 0.050^{\circ}C$	$1.591 + 0.004 \cdot Tr + 0.084^{\circ}C$	$3.155 + 0.001 \cdot Tr + 0.157^{\circ}C$
F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$

F-00010	$0.085 + 0.153^{\circ}\text{C}$	$0.144 + 0.245^{\circ}\text{C}$	$0.281 - 0.005^{\circ}\text{Tr} + 0.437^{\circ}\text{C}$
R-00010	$0.638 - 0.002^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$	$1.161 - 0.005^{\circ}\text{Tr} + 0.078^{\circ}\text{C}$	$2.279 + 0.003^{\circ}\text{Tr} + 0.146^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						
IO tog- gling/Output stable	$0.455 + 0.129^{\circ}\text{Tr}$	$0.573 + 0.408^{\circ}\text{Tr}$	$0.354 + 0.059^{\circ}\text{Tr}$	$0.452 + 0.192^{\circ}\text{Tr}$	$0.283 + 0.041^{\circ}\text{Tr}$	$0.360 + 0.131^{\circ}\text{Tr}$
ZI toggling	0.256	$0.257 + 0.002^{\circ}\text{Tr}$	0.199	$0.200 + 0.001^{\circ}\text{Tr}$	0.160	$0.159 + 0.001^{\circ}\text{Tr}$
<b>For vdde1v8</b>						
IO tog- gling/Output stable	$3.468 + 0.032^{\circ}\text{Tr}$	$4.029 + 0.035^{\circ}\text{Tr}$	$2.771 + 0.005^{\circ}\text{Tr}$	$3.235 - 0.043^{\circ}\text{Tr}$	$2.207 + 0.009^{\circ}\text{Tr}$	$2.556 - 0.032^{\circ}\text{Tr}$
ZI toggling	$0.173 + 0.055^{\circ}\text{Tr}$	$0.263 + 0.153^{\circ}\text{Tr}$	$0.133 + 0.019^{\circ}\text{Tr}$	$0.192 + 0.062^{\circ}\text{Tr}$	$0.104 + 0.008^{\circ}\text{Tr}$	$0.139 + 0.027^{\circ}\text{Tr}$

## BD2SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD2SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

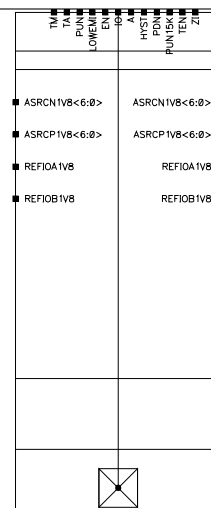
### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD2SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$



F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD2SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr



## BD2SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD2SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD2SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

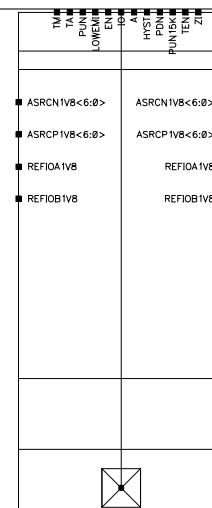
### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD2SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$



F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD2SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr



## BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$



F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr

## BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD2SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0375	0.0365	0.0357
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0330	0.0326	0.0324
HYST Input Cap.	0.0326	0.0323	0.0321
IO Input Cap.	1.3489	1.3483	1.3498
IO Max Load	51.349	51.348	51.350
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0190
PUN Input Cap.	0.0261	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0374	0.0364	0.0355
TEN Input Cap.	0.0315	0.0311	0.0308
TM Input Cap.	0.0449	0.0442	0.0441
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.429 + 0.186 \cdot Tr + 0.190 \cdot C$	$2.543 + 0.211 \cdot Tr + 0.302 \cdot C$	$4.878 + 0.242 \cdot Tr + 0.534 \cdot C$
R-010	$3.751 + 0.038 \cdot Tr + 0.108 \cdot C$	$7.129 + 0.079 \cdot Tr + 0.184 \cdot C$	$13.923 + 0.124 \cdot Tr + 0.352 \cdot C$
F-000	$0.985 + 0.180 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.216 \cdot Tr + 0.296 \cdot C$	$3.134 + 0.239 \cdot Tr + 0.521 \cdot C$
R-000	$2.849 + 0.038 \cdot Tr + 0.091 \cdot C$	$5.335 + 0.080 \cdot Tr + 0.154 \cdot C$	$10.384 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.536 + 0.134 \cdot Tr$	$0.811 + 0.194 \cdot Tr$	$1.376 + 0.247 \cdot Tr$
LZ-10	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.194 \cdot Tr$	$1.177 + 0.248 \cdot Tr$
HZ-00	$0.535 + 0.135 \cdot Tr$	$0.812 + 0.194 \cdot Tr$	$1.378 + 0.239 \cdot Tr$
LZ-00	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.196 \cdot Tr$	$1.177 + 0.250 \cdot Tr$
ZH-10	$3.819 + 0.206 \cdot Tr + 0.108 \cdot C$	$7.281 + 0.202 \cdot Tr + 0.184 \cdot C$	$14.186 + 0.370 \cdot Tr + 0.352 \cdot C$
ZL-10	$1.491 + 0.196 \cdot Tr + 0.190 \cdot C$	$2.649 + 0.257 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.286 \cdot Tr + 0.534 \cdot C$
ZH-00	$2.897 + 0.202 \cdot Tr + 0.091 \cdot C$	$5.424 + 0.250 \cdot Tr + 0.154 \cdot C$	$10.543 + 0.340 \cdot Tr + 0.292 \cdot C$
ZL-00	$1.028 + 0.184 \cdot Tr + 0.187 \cdot C$	$1.747 + 0.247 \cdot Tr + 0.296 \cdot C$	$3.263 + 0.273 \cdot Tr + 0.521 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.153 \cdot C$	$0.641 + 0.350 \cdot Tr + 0.167 \cdot C$	$0.950 + 0.409 \cdot Tr + 0.299 \cdot C$
R-1	$0.416 + 0.249 \cdot Tr + 0.064 \cdot C$	$0.591 + 0.287 \cdot Tr + 0.079 \cdot C$	$0.877 + 0.324 \cdot Tr + 0.162 \cdot C$
F-0	$0.418 + 0.100 \cdot Tr + 0.149 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.191 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.292 \cdot C$
R-0	$0.406 + 0.032 \cdot Tr + 0.077 \cdot C$	$0.597 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.886 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.427 + 0.191 \cdot Tr + 0.190 \cdot C$	$2.544 + 0.212 \cdot Tr + 0.302 \cdot C$	$4.874 + 0.245 \cdot Tr + 0.534 \cdot C$
R-101	$3.751 + 0.037 \cdot Tr + 0.108 \cdot C$	$7.131 + 0.078 \cdot Tr + 0.184 \cdot C$	$13.924 + 0.119 \cdot Tr + 0.352 \cdot C$
F-001	$0.984 + 0.183 \cdot Tr + 0.187 \cdot C$	$1.681 + 0.217 \cdot Tr + 0.296 \cdot C$	$3.137 + 0.236 \cdot Tr + 0.521 \cdot C$
R-001	$2.848 + 0.039 \cdot Tr + 0.091 \cdot C$	$5.337 + 0.081 \cdot Tr + 0.154 \cdot C$	$10.385 + 0.124 \cdot Tr + 0.292 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.535 + 0.135 \cdot Tr$	$0.810 + 0.197 \cdot Tr$	$1.376 + 0.252 \cdot Tr$
LZ-01	$0.442 + 0.136 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.175 + 0.252 \cdot Tr$
HZ-11	$0.536 + 0.133 \cdot Tr$	$0.811 + 0.195 \cdot Tr$	$1.374 + 0.251 \cdot Tr$
LZ-11	$0.442 + 0.135 \cdot Tr$	$0.682 + 0.193 \cdot Tr$	$1.176 + 0.252 \cdot Tr$
ZH-01	$2.897 + 0.204 \cdot Tr + 0.091 \cdot C$	$5.428 + 0.242 \cdot Tr + 0.154 \cdot C$	$10.552 + 0.333 \cdot Tr + 0.293 \cdot C$
ZL-01	$1.027 + 0.185 \cdot Tr + 0.187 \cdot C$	$1.749 + 0.244 \cdot Tr + 0.296 \cdot C$	$3.262 + 0.284 \cdot Tr + 0.521 \cdot C$
ZH-11	$3.825 + 0.195 \cdot Tr + 0.108 \cdot C$	$7.283 + 0.209 \cdot Tr + 0.184 \cdot C$	$14.191 + 0.355 \cdot Tr + 0.352 \cdot C$
ZL-11	$1.491 + 0.200 \cdot Tr + 0.190 \cdot C$	$2.655 + 0.246 \cdot Tr + 0.302 \cdot C$	$5.101 + 0.276 \cdot Tr + 0.534 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.233 \cdot \text{Tr}$	$1.371 + 0.297 \cdot \text{Tr}$
LZ-011	$0.274 + 0.283 \cdot \text{Tr}$	$0.406 + 0.404 \cdot \text{Tr}$	$0.665 + 0.494 \cdot \text{Tr}$
HZ-110	$0.550 + 0.228 \cdot \text{Tr}$	$0.836 + 0.258 \cdot \text{Tr}$	$1.413 + 0.303 \cdot \text{Tr}$
LZ-110	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.276 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
HZ-001	$0.532 + 0.162 \cdot \text{Tr}$	$0.805 + 0.232 \cdot \text{Tr}$	$1.367 + 0.298 \cdot \text{Tr}$
LZ-001	$0.274 + 0.282 \cdot \text{Tr}$	$0.406 + 0.402 \cdot \text{Tr}$	$0.666 + 0.488 \cdot \text{Tr}$
HZ-100	$0.550 + 0.226 \cdot \text{Tr}$	$0.834 + 0.259 \cdot \text{Tr}$	$1.413 + 0.302 \cdot \text{Tr}$
LZ-100	$0.295 + 0.239 \cdot \text{Tr}$	$0.446 + 0.274 \cdot \text{Tr}$	$0.742 + 0.318 \cdot \text{Tr}$
ZH-011	$3.822 + 0.223 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.282 + 0.234 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.208 + 0.303 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-011	$1.490 + 0.222 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.648 + 0.283 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.093 + 0.330 \cdot \text{Tr} + 0.534 \cdot \text{C}$
ZH-110	$3.833 + 0.006 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.297 + 0.056 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$14.232 + 0.053 \cdot \text{Tr} + 0.352 \cdot \text{C}$
ZL-110	$1.497 + 0.025 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.664 + 0.077 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$5.126 + 0.100 \cdot \text{Tr} + 0.535 \cdot \text{C}$
ZH-001	$2.895 + 0.231 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.418 + 0.284 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.554 + 0.325 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-001	$1.024 + 0.217 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.746 + 0.277 \cdot \text{Tr} + 0.295 \cdot \text{C}$	$3.255 + 0.321 \cdot \text{Tr} + 0.521 \cdot \text{C}$
ZH-100	$2.905 + 0.011 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.439 + 0.055 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.605 + 0.042 \cdot \text{Tr} + 0.292 \cdot \text{C}$
ZL-100	$1.036 + 0.011 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.764 + 0.067 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.282 + 0.124 \cdot \text{Tr} + 0.521 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.436 + 0.010 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.553 + 0.055 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.887 + 0.117 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-10100	$3.768 + 0.230 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.155 + 0.264 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.962 + 0.291 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-00110	$1.424 + 0.204 \cdot \text{Tr} + 0.190 \cdot \text{C}$	$2.535 + 0.227 \cdot \text{Tr} + 0.302 \cdot \text{C}$	$4.867 + 0.248 \cdot \text{Tr} + 0.534 \cdot \text{C}$
R-00110	$3.747 + 0.035 \cdot \text{Tr} + 0.108 \cdot \text{C}$	$7.126 + 0.089 \cdot \text{Tr} + 0.184 \cdot \text{C}$	$13.921 + 0.126 \cdot \text{Tr} + 0.352 \cdot \text{C}$
F-10000	$0.992 + 0.005 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.690 + 0.052 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.148 + 0.103 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-10000	$2.866 + 0.230 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.361 + 0.265 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.420 + 0.302 \cdot \text{Tr} + 0.292 \cdot \text{C}$
F-00010	$0.981 + 0.198 \cdot \text{Tr} + 0.187 \cdot \text{C}$	$1.671 + 0.237 \cdot \text{Tr} + 0.296 \cdot \text{C}$	$3.123 + 0.257 \cdot \text{Tr} + 0.521 \cdot \text{C}$
R-00010	$2.846 + 0.036 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$5.331 + 0.094 \cdot \text{Tr} + 0.154 \cdot \text{C}$	$10.379 + 0.136 \cdot \text{Tr} + 0.292 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.187 - 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.003 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.658 - 0.009 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-010	$0.871 - 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.593 + 0.084 \cdot \text{C}$	$3.153 + 0.004 \cdot \text{Tr} + 0.157 \cdot \text{C}$
F-000	$0.085 + 0.153 \cdot \text{C}$	$0.145 + 0.245 \cdot \text{C}$	$0.282 - 0.005 \cdot \text{Tr} + 0.437 \cdot \text{C}$
R-000	$0.638 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.161 + 0.004 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.280 + 0.146 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.875 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.598 - 0.002 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$3.166 + 0.007 \cdot \text{Tr} + 0.157 \cdot \text{C}$
ZL-10	$0.192 + 0.002 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.340 + 0.002 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.680 - 0.005 \cdot \text{Tr} + 0.429 \cdot \text{C}$
ZH-00	$0.640 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$	$1.164 - 0.001 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$2.298 - 0.007 \cdot \text{Tr} + 0.146 \cdot \text{C}$
ZL-00	$0.088 + 0.001 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$0.150 + 0.001 \cdot \text{Tr} + 0.245 \cdot \text{C}$	$0.294 - 0.004 \cdot \text{Tr} + 0.436 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.233 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.232 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.185 + 0.004 \cdot \text{Tr} + 0.151 \cdot \text{C}$	$0.330 + 0.005 \cdot \text{Tr} + 0.242 \cdot \text{C}$	$0.652 + 0.003 \cdot \text{Tr} + 0.430 \cdot \text{C}$
R-101	$0.871 - 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$1.591 + 0.004 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$3.155 + 0.001 \cdot \text{Tr} + 0.157 \cdot \text{C}$

F-001	$0.084 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.146 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.282 - 0.003 \cdot Tr + 0.437^{\circ}C$
R-001	$0.637 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.160 + 0.078^{\circ}C$	$2.278 - 0.003 \cdot Tr + 0.146^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.640 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.163 + 0.001 \cdot Tr + 0.078^{\circ}C$	$2.298 - 0.004 \cdot Tr + 0.146^{\circ}C$
ZL-01	$0.089 - 0.001 \cdot Tr + 0.153^{\circ}C$	$0.150 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.295 - 0.011 \cdot Tr + 0.436^{\circ}C$
ZH-11	$0.876 + 0.050^{\circ}C$	$1.600 + 0.084^{\circ}C$	$3.174 - 0.009 \cdot Tr + 0.157^{\circ}C$
ZL-11	$0.192 + 0.003 \cdot Tr + 0.151^{\circ}C$	$0.343 - 0.003 \cdot Tr + 0.241^{\circ}C$	$0.676 + 0.007 \cdot Tr + 0.429^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.876 - 0.004 \cdot Tr + 0.050^{\circ}C$	$1.598 + 0.005 \cdot Tr + 0.083^{\circ}C$	$3.169 + 0.007 \cdot Tr + 0.157^{\circ}C$
ZL-011	$0.192 + 0.151^{\circ}C$	$0.342 - 0.002 \cdot Tr + 0.242^{\circ}C$	$0.678 + 0.001 \cdot Tr + 0.429^{\circ}C$
ZH-110	$0.874 + 0.050^{\circ}C$	$1.596 + 0.084^{\circ}C$	$3.167 + 0.006 \cdot Tr + 0.157^{\circ}C$
ZL-110	$0.191 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.339 + 0.002 \cdot Tr + 0.242^{\circ}C$	$0.675 + 0.003 \cdot Tr + 0.429^{\circ}C$
ZH-001	$0.639 - 0.001 \cdot Tr + 0.047^{\circ}C$	$1.164 - 0.003 \cdot Tr + 0.078^{\circ}C$	$2.300 - 0.008 \cdot Tr + 0.146^{\circ}C$
ZL-001	$0.088 + 0.002 \cdot Tr + 0.153^{\circ}C$	$0.151 + 0.002 \cdot Tr + 0.245^{\circ}C$	$0.294 - 0.004 \cdot Tr + 0.436^{\circ}C$
ZH-100	$0.640 + 0.047^{\circ}C$	$1.162 - 0.002 \cdot Tr + 0.078^{\circ}C$	$2.288 - 0.002 \cdot Tr + 0.146^{\circ}C$
ZL-100	$0.088 + 0.004 \cdot Tr + 0.153^{\circ}C$	$0.151 - 0.005 \cdot Tr + 0.245^{\circ}C$	$0.289 + 0.006 \cdot Tr + 0.436^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.185 + 0.002 \cdot Tr + 0.151^{\circ}C$	$0.330 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.650 + 0.015 \cdot Tr + 0.430^{\circ}C$
R-10100	$0.871 + 0.050^{\circ}C$	$1.591 + 0.005 \cdot Tr + 0.084^{\circ}C$	$3.153 + 0.005 \cdot Tr + 0.157^{\circ}C$
F-00110	$0.187 - 0.002 \cdot Tr + 0.151^{\circ}C$	$0.329 + 0.003 \cdot Tr + 0.242^{\circ}C$	$0.652 - 0.001 \cdot Tr + 0.430^{\circ}C$
R-00110	$0.872 + 0.050^{\circ}C$	$1.592 + 0.084^{\circ}C$	$3.155 + 0.157^{\circ}C$
F-10000	$0.085 + 0.153^{\circ}C$	$0.144 - 0.003 \cdot Tr + 0.245^{\circ}C$	$0.281 + 0.437^{\circ}C$
R-10000	$0.637 + 0.047^{\circ}C$	$1.161 + 0.002 \cdot Tr + 0.078^{\circ}C$	$2.275 + 0.011 \cdot Tr + 0.146^{\circ}C$
F-00010	$0.085 + 0.153^{\circ}C$	$0.144 + 0.245^{\circ}C$	$0.281 - 0.005 \cdot Tr + 0.437^{\circ}C$
R-00010	$0.638 - 0.002 \cdot Tr + 0.047^{\circ}C$	$1.161 - 0.005 \cdot Tr + 0.078^{\circ}C$	$2.279 + 0.003 \cdot Tr + 0.146^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.111e-07
typ 1.00 25	2.760e-05	3.306e-06
worst 0.90 125	3.633e-04	7.656e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.455 + 0.129*Tr	0.573 + 0.408*Tr	0.354 + 0.059*Tr	0.452 + 0.192*Tr	0.283 + 0.041*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.199	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.468 + 0.032*Tr	4.029 + 0.035*Tr	2.771 + 0.005*Tr	3.235 - 0.043*Tr	2.207 + 0.009*Tr	2.556 - 0.032*Tr
ZI toggling	0.173 + 0.055*Tr	0.263 + 0.153*Tr	0.133 + 0.019*Tr	0.192 + 0.062*Tr	0.104 + 0.008*Tr	0.139 + 0.027*Tr



## BD4SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD4SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.648 + 0.211 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.058 + 0.253 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-010	$3.424 + 0.039 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.402 + 0.078 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.361 + 0.116 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-000	$1.185 + 0.184 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.074 + 0.220 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.936 + 0.251 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-000	$2.905 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.389 + 0.081 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.385 + 0.118 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot \text{Tr}$	$0.957 + 0.199 \cdot \text{Tr}$	$1.633 + 0.250 \cdot \text{Tr}$
LZ-10	$0.446 + 0.135 \cdot \text{Tr}$	$0.689 + 0.193 \cdot \text{Tr}$	$1.186 + 0.247 \cdot \text{Tr}$
HZ-00	$0.641 + 0.137 \cdot \text{Tr}$	$0.956 + 0.199 \cdot \text{Tr}$	$1.633 + 0.251 \cdot \text{Tr}$
LZ-00	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.194 \cdot \text{Tr}$	$1.187 + 0.247 \cdot \text{Tr}$
ZH-10	$3.468 + 0.197 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.486 + 0.254 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.507 + 0.326 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-10	$1.559 + 0.194 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.758 + 0.247 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.283 + 0.262 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-00	$2.938 + 0.207 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.508 + 0.301 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-00	$1.236 + 0.189 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.161 + 0.240 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.104 + 0.288 \cdot \text{Tr} + 0.270 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot \text{Tr} + 0.130 \cdot \text{C}$	$0.632 + 0.349 \cdot \text{Tr} + 0.276 \cdot \text{C}$	$0.947 + 0.407 \cdot \text{Tr} + 0.376 \cdot \text{C}$
R-1	$0.412 + 0.249 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.590 + 0.288 \cdot \text{Tr} + 0.058 \cdot \text{C}$	$0.866 + 0.326 \cdot \text{Tr} + 0.255 \cdot \text{C}$
F-0	$0.417 + 0.100 \cdot \text{Tr} + 0.160 \cdot \text{C}$	$0.623 + 0.143 \cdot \text{Tr} + 0.192 \cdot \text{C}$	$0.952 + 0.202 \cdot \text{Tr} + 0.291 \cdot \text{C}$
R-0	$0.407 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.596 + 0.058 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.884 + 0.102 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.647 + 0.214 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.054 + 0.258 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-101	$3.423 + 0.041 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.400 + 0.087 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.358 + 0.130 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-001	$1.186 + 0.186 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.075 + 0.213 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.941 + 0.244 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-001	$2.905 + 0.039 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.391 + 0.080 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.391 + 0.125 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.246 \cdot \text{Tr}$
LZ-01	$0.446 + 0.136 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.246 \cdot \text{Tr}$
HZ-11	$0.640 + 0.141 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.245 \cdot \text{Tr}$
LZ-11	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.248 \cdot \text{Tr}$
ZH-01	$2.942 + 0.201 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.516 + 0.298 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-01	$1.234 + 0.197 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.158 + 0.252 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.110 + 0.275 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-11	$3.468 + 0.203 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.484 + 0.245 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.510 + 0.319 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-11	$1.560 + 0.197 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.761 + 0.243 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.279 + 0.288 \cdot \text{Tr} + 0.276 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD4SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD4SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$



F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD4SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.648 + 0.211 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.058 + 0.253 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-010	$3.424 + 0.039 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.402 + 0.078 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.361 + 0.116 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-000	$1.185 + 0.184 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.074 + 0.220 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.936 + 0.251 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-000	$2.905 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.389 + 0.081 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.385 + 0.118 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot \text{Tr}$	$0.957 + 0.199 \cdot \text{Tr}$	$1.633 + 0.250 \cdot \text{Tr}$
LZ-10	$0.446 + 0.135 \cdot \text{Tr}$	$0.689 + 0.193 \cdot \text{Tr}$	$1.186 + 0.247 \cdot \text{Tr}$
HZ-00	$0.641 + 0.137 \cdot \text{Tr}$	$0.956 + 0.199 \cdot \text{Tr}$	$1.633 + 0.251 \cdot \text{Tr}$
LZ-00	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.194 \cdot \text{Tr}$	$1.187 + 0.247 \cdot \text{Tr}$
ZH-10	$3.468 + 0.197 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.486 + 0.254 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.507 + 0.326 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-10	$1.559 + 0.194 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.758 + 0.247 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.283 + 0.262 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-00	$2.938 + 0.207 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.508 + 0.301 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-00	$1.236 + 0.189 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.161 + 0.240 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.104 + 0.288 \cdot \text{Tr} + 0.270 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot \text{Tr} + 0.130 \cdot \text{C}$	$0.632 + 0.349 \cdot \text{Tr} + 0.276 \cdot \text{C}$	$0.947 + 0.407 \cdot \text{Tr} + 0.376 \cdot \text{C}$
R-1	$0.412 + 0.249 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.590 + 0.288 \cdot \text{Tr} + 0.058 \cdot \text{C}$	$0.866 + 0.326 \cdot \text{Tr} + 0.255 \cdot \text{C}$
F-0	$0.417 + 0.100 \cdot \text{Tr} + 0.160 \cdot \text{C}$	$0.623 + 0.143 \cdot \text{Tr} + 0.192 \cdot \text{C}$	$0.952 + 0.202 \cdot \text{Tr} + 0.291 \cdot \text{C}$
R-0	$0.407 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.596 + 0.058 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.884 + 0.102 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.647 + 0.214 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.054 + 0.258 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-101	$3.423 + 0.041 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.400 + 0.087 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.358 + 0.130 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-001	$1.186 + 0.186 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.075 + 0.213 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.941 + 0.244 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-001	$2.905 + 0.039 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.391 + 0.080 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.391 + 0.125 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.246 \cdot \text{Tr}$
LZ-01	$0.446 + 0.136 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.246 \cdot \text{Tr}$
HZ-11	$0.640 + 0.141 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.245 \cdot \text{Tr}$
LZ-11	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.248 \cdot \text{Tr}$
ZH-01	$2.942 + 0.201 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.516 + 0.298 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-01	$1.234 + 0.197 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.158 + 0.252 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.110 + 0.275 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-11	$3.468 + 0.203 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.484 + 0.245 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.510 + 0.319 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-11	$1.560 + 0.197 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.761 + 0.243 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.279 + 0.288 \cdot \text{Tr} + 0.276 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr



## BD4SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD4SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

**Special Pin Properties**

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD4SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD4SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$



F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD4SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr



## BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$



F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD4SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr



**BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_CL\_LIN****Cell Description**

BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

**Physical Dimensions**

Area(um2) : 4252.000

**Glossary**

Tr : Input Transition time  
 C : Output (capacitive) load  
 R : Rising edge  
 F : Falling edge

**Logical Symbol****Truth Table**

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

**Cell Capacitance**

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.648 + 0.211 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.058 + 0.253 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-010	$3.424 + 0.039 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.402 + 0.078 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.361 + 0.116 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-000	$1.185 + 0.184 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.074 + 0.220 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.936 + 0.251 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-000	$2.905 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.389 + 0.081 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.385 + 0.118 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot \text{Tr}$	$0.957 + 0.199 \cdot \text{Tr}$	$1.633 + 0.250 \cdot \text{Tr}$
LZ-10	$0.446 + 0.135 \cdot \text{Tr}$	$0.689 + 0.193 \cdot \text{Tr}$	$1.186 + 0.247 \cdot \text{Tr}$
HZ-00	$0.641 + 0.137 \cdot \text{Tr}$	$0.956 + 0.199 \cdot \text{Tr}$	$1.633 + 0.251 \cdot \text{Tr}$
LZ-00	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.194 \cdot \text{Tr}$	$1.187 + 0.247 \cdot \text{Tr}$
ZH-10	$3.468 + 0.197 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.486 + 0.254 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.507 + 0.326 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-10	$1.559 + 0.194 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.758 + 0.247 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.283 + 0.262 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-00	$2.938 + 0.207 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.508 + 0.301 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-00	$1.236 + 0.189 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.161 + 0.240 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.104 + 0.288 \cdot \text{Tr} + 0.270 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot \text{Tr} + 0.130 \cdot \text{C}$	$0.632 + 0.349 \cdot \text{Tr} + 0.276 \cdot \text{C}$	$0.947 + 0.407 \cdot \text{Tr} + 0.376 \cdot \text{C}$
R-1	$0.412 + 0.249 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.590 + 0.288 \cdot \text{Tr} + 0.058 \cdot \text{C}$	$0.866 + 0.326 \cdot \text{Tr} + 0.255 \cdot \text{C}$
F-0	$0.417 + 0.100 \cdot \text{Tr} + 0.160 \cdot \text{C}$	$0.623 + 0.143 \cdot \text{Tr} + 0.192 \cdot \text{C}$	$0.952 + 0.202 \cdot \text{Tr} + 0.291 \cdot \text{C}$
R-0	$0.407 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.596 + 0.058 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.884 + 0.102 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.647 + 0.214 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.054 + 0.258 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-101	$3.423 + 0.041 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.400 + 0.087 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.358 + 0.130 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-001	$1.186 + 0.186 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.075 + 0.213 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.941 + 0.244 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-001	$2.905 + 0.039 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.391 + 0.080 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.391 + 0.125 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.246 \cdot \text{Tr}$
LZ-01	$0.446 + 0.136 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.246 \cdot \text{Tr}$
HZ-11	$0.640 + 0.141 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.245 \cdot \text{Tr}$
LZ-11	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.248 \cdot \text{Tr}$
ZH-01	$2.942 + 0.201 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.516 + 0.298 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-01	$1.234 + 0.197 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.158 + 0.252 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.110 + 0.275 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-11	$3.468 + 0.203 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.484 + 0.245 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.510 + 0.319 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-11	$1.560 + 0.197 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.761 + 0.243 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.279 + 0.288 \cdot \text{Tr} + 0.276 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

**BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_FC\_INNER****Cell Description**

BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

**Physical Dimensions**

Area(um2) : 3632.000

**Glossary**

Tr : Input Transition time  
 C : Output (capacitive) load  
 R : Rising edge  
 F : Falling edge

**Logical Symbol****Truth Table**

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

**Cell Capacitance**

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

**BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_FC\_LIN****Cell Description**

BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

**Physical Dimensions**

Area(um2) : 3632.000

**Glossary**

Tr : Input Transition time  
 C : Output (capacitive) load  
 R : Rising edge  
 F : Falling edge

**Logical Symbol****Truth Table**

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

**Cell Capacitance**

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot Tr + 0.098 \cdot C$	$2.648 + 0.211 \cdot Tr + 0.155 \cdot C$	$5.058 + 0.253 \cdot Tr + 0.275 \cdot C$
R-010	$3.424 + 0.039 \cdot Tr + 0.053 \cdot C$	$6.402 + 0.078 \cdot Tr + 0.091 \cdot C$	$12.361 + 0.116 \cdot Tr + 0.173 \cdot C$
F-000	$1.185 + 0.184 \cdot Tr + 0.096 \cdot C$	$2.074 + 0.220 \cdot Tr + 0.153 \cdot C$	$3.936 + 0.251 \cdot Tr + 0.270 \cdot C$
R-000	$2.905 + 0.038 \cdot Tr + 0.049 \cdot C$	$5.389 + 0.081 \cdot Tr + 0.083 \cdot C$	$10.385 + 0.118 \cdot Tr + 0.158 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot Tr$	$0.957 + 0.199 \cdot Tr$	$1.633 + 0.250 \cdot Tr$
LZ-10	$0.446 + 0.135 \cdot Tr$	$0.689 + 0.193 \cdot Tr$	$1.186 + 0.247 \cdot Tr$
HZ-00	$0.641 + 0.137 \cdot Tr$	$0.956 + 0.199 \cdot Tr$	$1.633 + 0.251 \cdot Tr$
LZ-00	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.194 \cdot Tr$	$1.187 + 0.247 \cdot Tr$
ZH-10	$3.468 + 0.197 \cdot Tr + 0.053 \cdot C$	$6.486 + 0.254 \cdot Tr + 0.091 \cdot C$	$12.507 + 0.326 \cdot Tr + 0.173 \cdot C$
ZL-10	$1.559 + 0.194 \cdot Tr + 0.098 \cdot C$	$2.758 + 0.247 \cdot Tr + 0.155 \cdot C$	$5.283 + 0.262 \cdot Tr + 0.276 \cdot C$
ZH-00	$2.938 + 0.207 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.508 + 0.301 \cdot Tr + 0.158 \cdot C$
ZL-00	$1.236 + 0.189 \cdot Tr + 0.096 \cdot C$	$2.161 + 0.240 \cdot Tr + 0.153 \cdot C$	$4.104 + 0.288 \cdot Tr + 0.270 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot Tr + 0.130 \cdot C$	$0.632 + 0.349 \cdot Tr + 0.276 \cdot C$	$0.947 + 0.407 \cdot Tr + 0.376 \cdot C$
R-1	$0.412 + 0.249 \cdot Tr + 0.119 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.058 \cdot C$	$0.866 + 0.326 \cdot Tr + 0.255 \cdot C$
F-0	$0.417 + 0.100 \cdot Tr + 0.160 \cdot C$	$0.623 + 0.143 \cdot Tr + 0.192 \cdot C$	$0.952 + 0.202 \cdot Tr + 0.291 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.596 + 0.058 \cdot Tr + 0.120 \cdot C$	$0.884 + 0.102 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot Tr + 0.098 \cdot C$	$2.647 + 0.214 \cdot Tr + 0.155 \cdot C$	$5.054 + 0.258 \cdot Tr + 0.275 \cdot C$
R-101	$3.423 + 0.041 \cdot Tr + 0.053 \cdot C$	$6.400 + 0.087 \cdot Tr + 0.091 \cdot C$	$12.358 + 0.130 \cdot Tr + 0.173 \cdot C$
F-001	$1.186 + 0.186 \cdot Tr + 0.096 \cdot C$	$2.075 + 0.213 \cdot Tr + 0.153 \cdot C$	$3.941 + 0.244 \cdot Tr + 0.270 \cdot C$
R-001	$2.905 + 0.039 \cdot Tr + 0.049 \cdot C$	$5.391 + 0.080 \cdot Tr + 0.083 \cdot C$	$10.391 + 0.125 \cdot Tr + 0.158 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.246 \cdot Tr$
LZ-01	$0.446 + 0.136 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.246 \cdot Tr$
HZ-11	$0.640 + 0.141 \cdot Tr$	$0.955 + 0.202 \cdot Tr$	$1.633 + 0.245 \cdot Tr$
LZ-11	$0.446 + 0.135 \cdot Tr$	$0.688 + 0.196 \cdot Tr$	$1.184 + 0.248 \cdot Tr$
ZH-01	$2.942 + 0.201 \cdot Tr + 0.049 \cdot C$	$5.457 + 0.247 \cdot Tr + 0.083 \cdot C$	$10.516 + 0.298 \cdot Tr + 0.158 \cdot C$
ZL-01	$1.234 + 0.197 \cdot Tr + 0.096 \cdot C$	$2.158 + 0.252 \cdot Tr + 0.153 \cdot C$	$4.110 + 0.275 \cdot Tr + 0.270 \cdot C$
ZH-11	$3.468 + 0.203 \cdot Tr + 0.053 \cdot C$	$6.484 + 0.245 \cdot Tr + 0.091 \cdot C$	$12.510 + 0.319 \cdot Tr + 0.173 \cdot C$
ZL-11	$1.560 + 0.197 \cdot Tr + 0.098 \cdot C$	$2.761 + 0.243 \cdot Tr + 0.155 \cdot C$	$5.279 + 0.288 \cdot Tr + 0.276 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$



F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr

## BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD4SCARUDQPCZ\_IL\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0320
IO Input Cap.	1.4155	1.4136	1.4140
IO Max Load	101.415	101.414	101.414
LOWEMI Input Cap.	0.0263	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0249	0.0247
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0358
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0448	0.0441	0.0439
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.492 + 0.187 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.648 + 0.211 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.058 + 0.253 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-010	$3.424 + 0.039 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.402 + 0.078 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.361 + 0.116 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-000	$1.185 + 0.184 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.074 + 0.220 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.936 + 0.251 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-000	$2.905 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.389 + 0.081 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.385 + 0.118 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.639 + 0.137 \cdot \text{Tr}$	$0.957 + 0.199 \cdot \text{Tr}$	$1.633 + 0.250 \cdot \text{Tr}$
LZ-10	$0.446 + 0.135 \cdot \text{Tr}$	$0.689 + 0.193 \cdot \text{Tr}$	$1.186 + 0.247 \cdot \text{Tr}$
HZ-00	$0.641 + 0.137 \cdot \text{Tr}$	$0.956 + 0.199 \cdot \text{Tr}$	$1.633 + 0.251 \cdot \text{Tr}$
LZ-00	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.194 \cdot \text{Tr}$	$1.187 + 0.247 \cdot \text{Tr}$
ZH-10	$3.468 + 0.197 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.486 + 0.254 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.507 + 0.326 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-10	$1.559 + 0.194 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.758 + 0.247 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.283 + 0.262 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-00	$2.938 + 0.207 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.508 + 0.301 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-00	$1.236 + 0.189 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.161 + 0.240 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.104 + 0.288 \cdot \text{Tr} + 0.270 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.442 + 0.290 \cdot \text{Tr} + 0.130 \cdot \text{C}$	$0.632 + 0.349 \cdot \text{Tr} + 0.276 \cdot \text{C}$	$0.947 + 0.407 \cdot \text{Tr} + 0.376 \cdot \text{C}$
R-1	$0.412 + 0.249 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.590 + 0.288 \cdot \text{Tr} + 0.058 \cdot \text{C}$	$0.866 + 0.326 \cdot \text{Tr} + 0.255 \cdot \text{C}$
F-0	$0.417 + 0.100 \cdot \text{Tr} + 0.160 \cdot \text{C}$	$0.623 + 0.143 \cdot \text{Tr} + 0.192 \cdot \text{C}$	$0.952 + 0.202 \cdot \text{Tr} + 0.291 \cdot \text{C}$
R-0	$0.407 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.596 + 0.058 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.884 + 0.102 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.493 + 0.192 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.647 + 0.214 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.054 + 0.258 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-101	$3.423 + 0.041 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.400 + 0.087 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.358 + 0.130 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-001	$1.186 + 0.186 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.075 + 0.213 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.941 + 0.244 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-001	$2.905 + 0.039 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.391 + 0.080 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.391 + 0.125 \cdot \text{Tr} + 0.158 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.639 + 0.136 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.246 \cdot \text{Tr}$
LZ-01	$0.446 + 0.136 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.246 \cdot \text{Tr}$
HZ-11	$0.640 + 0.141 \cdot \text{Tr}$	$0.955 + 0.202 \cdot \text{Tr}$	$1.633 + 0.245 \cdot \text{Tr}$
LZ-11	$0.446 + 0.135 \cdot \text{Tr}$	$0.688 + 0.196 \cdot \text{Tr}$	$1.184 + 0.248 \cdot \text{Tr}$
ZH-01	$2.942 + 0.201 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.457 + 0.247 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.516 + 0.298 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-01	$1.234 + 0.197 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.158 + 0.252 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.110 + 0.275 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-11	$3.468 + 0.203 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.484 + 0.245 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.510 + 0.319 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-11	$1.560 + 0.197 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.761 + 0.243 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.279 + 0.288 \cdot \text{Tr} + 0.276 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.636 + 0.166 \cdot \text{Tr}$	$0.949 + 0.240 \cdot \text{Tr}$	$1.625 + 0.296 \cdot \text{Tr}$
LZ-011	$0.280 + 0.055 \cdot \text{Tr}$	$0.422 + 0.117 \cdot \text{Tr}$	$0.705 + 0.187 \cdot \text{Tr}$
HZ-110	$0.656 + 0.223 \cdot \text{Tr}$	$0.982 + 0.262 \cdot \text{Tr}$	$1.669 + 0.298 \cdot \text{Tr}$
LZ-110	$0.299 + 0.239 \cdot \text{Tr}$	$0.451 + 0.277 \cdot \text{Tr}$	$0.752 + 0.312 \cdot \text{Tr}$
HZ-001	$0.638 + 0.159 \cdot \text{Tr}$	$0.951 + 0.237 \cdot \text{Tr}$	$1.624 + 0.299 \cdot \text{Tr}$
LZ-001	$0.281 + 0.061 \cdot \text{Tr}$	$0.420 + 0.126 \cdot \text{Tr}$	$0.704 + 0.194 \cdot \text{Tr}$
HZ-100	$0.655 + 0.225 \cdot \text{Tr}$	$0.980 + 0.268 \cdot \text{Tr}$	$1.668 + 0.300 \cdot \text{Tr}$
LZ-100	$0.299 + 0.239 \cdot \text{Tr}$	$0.452 + 0.275 \cdot \text{Tr}$	$0.752 + 0.313 \cdot \text{Tr}$
ZH-011	$3.467 + 0.222 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.480 + 0.285 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.495 + 0.355 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-011	$1.557 + 0.226 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.754 + 0.278 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.268 + 0.329 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-110	$3.477 + 0.008 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.496 + 0.064 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.523 + 0.105 \cdot \text{Tr} + 0.173 \cdot \text{C}$
ZL-110	$1.570 + 0.015 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.777 + 0.070 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.308 + 0.091 \cdot \text{Tr} + 0.276 \cdot \text{C}$
ZH-001	$2.935 + 0.235 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.450 + 0.283 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.502 + 0.345 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-001	$1.232 + 0.223 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.157 + 0.278 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.098 + 0.326 \cdot \text{Tr} + 0.270 \cdot \text{C}$
ZH-100	$2.944 + 0.017 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.467 + 0.051 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.533 + 0.080 \cdot \text{Tr} + 0.158 \cdot \text{C}$
ZL-100	$1.243 + 0.015 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.178 + 0.064 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$4.124 + 0.125 \cdot \text{Tr} + 0.270 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.501 + 0.012 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.654 + 0.060 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.065 + 0.124 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-10100	$3.440 + 0.233 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.424 + 0.267 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.401 + 0.301 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-00110	$1.487 + 0.203 \cdot \text{Tr} + 0.098 \cdot \text{C}$	$2.639 + 0.235 \cdot \text{Tr} + 0.155 \cdot \text{C}$	$5.047 + 0.254 \cdot \text{Tr} + 0.275 \cdot \text{C}$
R-00110	$3.420 + 0.037 \cdot \text{Tr} + 0.053 \cdot \text{C}$	$6.397 + 0.084 \cdot \text{Tr} + 0.091 \cdot \text{C}$	$12.355 + 0.144 \cdot \text{Tr} + 0.173 \cdot \text{C}$
F-10000	$1.195 + 0.007 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.082 + 0.061 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.949 + 0.108 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-10000	$2.922 + 0.233 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.418 + 0.264 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.424 + 0.303 \cdot \text{Tr} + 0.158 \cdot \text{C}$
F-00010	$1.182 + 0.200 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$2.069 + 0.227 \cdot \text{Tr} + 0.153 \cdot \text{C}$	$3.925 + 0.273 \cdot \text{Tr} + 0.270 \cdot \text{C}$
R-00010	$2.902 + 0.038 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$5.387 + 0.086 \cdot \text{Tr} + 0.083 \cdot \text{C}$	$10.384 + 0.139 \cdot \text{Tr} + 0.158 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.219 + 0.076 \cdot \text{C}$	$0.387 + 0.002 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.759 - 0.007 \cdot \text{Tr} + 0.214 \cdot \text{C}$
R-010	$0.768 - 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.395 + 0.006 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.762 + 0.013 \cdot \text{Tr} + 0.078 \cdot \text{C}$
F-000	$0.162 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.280 + 0.008 \cdot \text{Tr} + 0.122 \cdot \text{C}$	$0.558 + 0.216 \cdot \text{C}$
R-000	$0.652 - 0.003 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.186 - 0.004 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.340 + 0.009 \cdot \text{Tr} + 0.076 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.770 + 0.025 \cdot \text{C}$	$1.407 - 0.003 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.786 - 0.014 \cdot \text{Tr} + 0.078 \cdot \text{C}$
ZL-10	$0.225 + 0.004 \cdot \text{Tr} + 0.075 \cdot \text{C}$	$0.399 - 0.003 \cdot \text{Tr} + 0.120 \cdot \text{C}$	$0.787 - 0.005 \cdot \text{Tr} + 0.214 \cdot \text{C}$
ZH-00	$0.656 - 0.008 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$1.182 + 0.002 \cdot \text{Tr} + 0.040 \cdot \text{C}$	$2.345 + 0.003 \cdot \text{Tr} + 0.075 \cdot \text{C}$
ZL-00	$0.169 + 0.076 \cdot \text{C}$	$0.292 - 0.003 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.581 - 0.004 \cdot \text{Tr} + 0.216 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.231 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.148 \cdot \text{C}$	$0.011 + 0.230 \cdot \text{C}$
R-0	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.088 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.218 + 0.002 \cdot \text{Tr} + 0.076 \cdot \text{C}$	$0.383 + 0.005 \cdot \text{Tr} + 0.121 \cdot \text{C}$	$0.751 + 0.010 \cdot \text{Tr} + 0.215 \cdot \text{C}$
R-101	$0.768 - 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$1.398 - 0.002 \cdot \text{Tr} + 0.042 \cdot \text{C}$	$2.767 - 0.010 \cdot \text{Tr} + 0.078 \cdot \text{C}$

F-001	$0.163 - 0.002 \cdot Tr + 0.076^{\circ}C$	$0.283 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.558 - 0.003 \cdot Tr + 0.216^{\circ}C$
R-001	$0.650 - 0.001 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.004 \cdot Tr + 0.076^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.653 - 0.003 \cdot Tr + 0.024^{\circ}C$	$1.184 - 0.001 \cdot Tr + 0.040^{\circ}C$	$2.346 - 0.008 \cdot Tr + 0.076^{\circ}C$
ZL-01	$0.167 + 0.005 \cdot Tr + 0.076^{\circ}C$	$0.291 + 0.005 \cdot Tr + 0.121^{\circ}C$	$0.577 - 0.006 \cdot Tr + 0.216^{\circ}C$
ZH-11	$0.770 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.412 + 0.042^{\circ}C$	$2.784 + 0.001 \cdot Tr + 0.078^{\circ}C$
ZL-11	$0.225 + 0.002 \cdot Tr + 0.075^{\circ}C$	$0.398 - 0.004 \cdot Tr + 0.120^{\circ}C$	$0.781 + 0.214^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.770 + 0.025^{\circ}C$	$1.407 - 0.005 \cdot Tr + 0.042^{\circ}C$	$2.779 - 0.006 \cdot Tr + 0.078^{\circ}C$
ZL-011	$0.224 + 0.004 \cdot Tr + 0.075^{\circ}C$	$0.399 - 0.011 \cdot Tr + 0.121^{\circ}C$	$0.781 + 0.003 \cdot Tr + 0.214^{\circ}C$
ZH-110	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.408 - 0.009 \cdot Tr + 0.042^{\circ}C$	$2.782 - 0.009 \cdot Tr + 0.078^{\circ}C$
ZL-110	$0.226 - 0.001 \cdot Tr + 0.075^{\circ}C$	$0.397 + 0.120^{\circ}C$	$0.780 - 0.011 \cdot Tr + 0.214^{\circ}C$
ZH-001	$0.656 - 0.006 \cdot Tr + 0.024^{\circ}C$	$1.183 + 0.002 \cdot Tr + 0.040^{\circ}C$	$2.345 - 0.007 \cdot Tr + 0.076^{\circ}C$
ZL-001	$0.169 + 0.076^{\circ}C$	$0.291 + 0.004 \cdot Tr + 0.121^{\circ}C$	$0.580 - 0.005 \cdot Tr + 0.216^{\circ}C$
ZH-100	$0.657 - 0.008 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.008 \cdot Tr + 0.040^{\circ}C$	$2.340 + 0.001 \cdot Tr + 0.076^{\circ}C$
ZL-100	$0.169 + 0.002 \cdot Tr + 0.076^{\circ}C$	$0.292 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.573 + 0.005 \cdot Tr + 0.216^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.219 + 0.076^{\circ}C$	$0.384 + 0.002 \cdot Tr + 0.121^{\circ}C$	$0.753 + 0.012 \cdot Tr + 0.215^{\circ}C$
R-10100	$0.769 - 0.002 \cdot Tr + 0.025^{\circ}C$	$1.401 - 0.003 \cdot Tr + 0.042^{\circ}C$	$2.764 - 0.007 \cdot Tr + 0.078^{\circ}C$
F-00110	$0.219 + 0.076^{\circ}C$	$0.386 - 0.002 \cdot Tr + 0.121^{\circ}C$	$0.758 + 0.005 \cdot Tr + 0.214^{\circ}C$
R-00110	$0.769 - 0.004 \cdot Tr + 0.025^{\circ}C$	$1.396 + 0.007 \cdot Tr + 0.042^{\circ}C$	$2.763 - 0.002 \cdot Tr + 0.078^{\circ}C$
F-10000	$0.162 + 0.076^{\circ}C$	$0.280 + 0.010 \cdot Tr + 0.121^{\circ}C$	$0.557 - 0.007 \cdot Tr + 0.216^{\circ}C$
R-10000	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.181 + 0.004 \cdot Tr + 0.040^{\circ}C$	$2.333 + 0.004 \cdot Tr + 0.076^{\circ}C$
F-00010	$0.163 + 0.076^{\circ}C$	$0.283 + 0.121^{\circ}C$	$0.558 + 0.004 \cdot Tr + 0.216^{\circ}C$
R-00010	$0.651 - 0.004 \cdot Tr + 0.024^{\circ}C$	$1.182 + 0.040^{\circ}C$	$2.328 + 0.010 \cdot Tr + 0.076^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.626e-07
typ 1.00 25	2.760e-05	3.689e-06
worst 0.90 125	3.633e-04	8.588e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.132*Tr	0.573 + 0.408*Tr	0.355 + 0.058*Tr	0.452 + 0.191*Tr	0.283 + 0.040*Tr	0.360 + 0.131*Tr
ZI toggling	0.256	0.258 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.160 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	3.800 + 0.036*Tr	4.386 + 0.010*Tr	3.058 + 0.001*Tr	3.516 - 0.034*Tr	2.418 - 0.001*Tr	2.773 - 0.014*Tr
ZI toggling	0.173 + 0.055*Tr	0.262 + 0.152*Tr	0.133 + 0.018*Tr	0.193 + 0.061*Tr	0.105 + 0.008*Tr	0.139 + 0.027*Tr



## BD6SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD6SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD6SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050 \cdot C$	$0.320 + 0.019 \cdot Tr + 0.081 \cdot C$	$0.633 + 0.002 \cdot Tr + 0.144 \cdot C$
R-001	$0.592 + 0.018 \cdot C$	$1.069 - 0.004 \cdot Tr + 0.029 \cdot C$	$2.097 + 0.003 \cdot Tr + 0.055 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018 \cdot C$	$1.073 - 0.002 \cdot Tr + 0.029 \cdot C$	$2.106 + 0.003 \cdot Tr + 0.055 \cdot C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050 \cdot C$	$0.335 + 0.081 \cdot C$	$0.653 - 0.010 \cdot Tr + 0.144 \cdot C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018 \cdot C$	$1.262 - 0.002 \cdot Tr + 0.030 \cdot C$	$2.491 + 0.056 \cdot C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050 \cdot C$	$0.467 - 0.011 \cdot Tr + 0.080 \cdot C$	$0.908 - 0.005 \cdot Tr + 0.142 \cdot C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018 \cdot C$	$1.260 + 0.010 \cdot Tr + 0.030 \cdot C$	$2.488 + 0.016 \cdot Tr + 0.056 \cdot C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050 \cdot C$	$0.462 - 0.007 \cdot Tr + 0.080 \cdot C$	$0.909 - 0.005 \cdot Tr + 0.142 \cdot C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018 \cdot C$	$1.261 + 0.005 \cdot Tr + 0.030 \cdot C$	$2.483 + 0.017 \cdot Tr + 0.056 \cdot C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050 \cdot C$	$0.460 + 0.009 \cdot Tr + 0.080 \cdot C$	$0.901 + 0.019 \cdot Tr + 0.143 \cdot C$
ZH-001	$0.595 + 0.018 \cdot C$	$1.075 + 0.001 \cdot Tr + 0.029 \cdot C$	$2.104 - 0.008 \cdot Tr + 0.055 \cdot C$
ZL-001	$0.192 + 0.050 \cdot C$	$0.337 - 0.008 \cdot Tr + 0.081 \cdot C$	$0.652 + 0.005 \cdot Tr + 0.143 \cdot C$
ZH-100	$0.594 + 0.018 \cdot C$	$1.071 + 0.029 \cdot C$	$2.109 - 0.005 \cdot Tr + 0.055 \cdot C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050 \cdot C$	$0.336 - 0.004 \cdot Tr + 0.081 \cdot C$	$0.648 + 0.017 \cdot Tr + 0.143 \cdot C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050 \cdot C$	$0.446 + 0.006 \cdot Tr + 0.080 \cdot C$	$0.878 + 0.004 \cdot Tr + 0.143 \cdot C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018 \cdot C$	$1.259 + 0.030 \cdot C$	$2.475 + 0.004 \cdot Tr + 0.056 \cdot C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050 \cdot C$	$0.450 - 0.007 \cdot Tr + 0.080 \cdot C$	$0.880 + 0.143 \cdot C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018 \cdot C$	$1.262 - 0.007 \cdot Tr + 0.030 \cdot C$	$2.472 + 0.016 \cdot Tr + 0.056 \cdot C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050 \cdot C$	$0.327 - 0.009 \cdot Tr + 0.081 \cdot C$	$0.636 - 0.016 \cdot Tr + 0.144 \cdot C$
R-10000	$0.592 + 0.018 \cdot C$	$1.068 - 0.003 \cdot Tr + 0.029 \cdot C$	$2.099 + 0.055 \cdot C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050 \cdot C$	$0.322 + 0.005 \cdot Tr + 0.081 \cdot C$	$0.638 - 0.019 \cdot Tr + 0.144 \cdot C$
R-00010	$0.591 + 0.018 \cdot C$	$1.067 + 0.029 \cdot C$	$2.096 - 0.002 \cdot Tr + 0.055 \cdot C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD6SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$



F-001	$0.185 + 0.006 \cdot Tr + 0.050 \cdot C$	$0.320 + 0.019 \cdot Tr + 0.081 \cdot C$	$0.633 + 0.002 \cdot Tr + 0.144 \cdot C$
R-001	$0.592 + 0.018 \cdot C$	$1.069 - 0.004 \cdot Tr + 0.029 \cdot C$	$2.097 + 0.003 \cdot Tr + 0.055 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018 \cdot C$	$1.073 - 0.002 \cdot Tr + 0.029 \cdot C$	$2.106 + 0.003 \cdot Tr + 0.055 \cdot C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050 \cdot C$	$0.335 + 0.081 \cdot C$	$0.653 - 0.010 \cdot Tr + 0.144 \cdot C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018 \cdot C$	$1.262 - 0.002 \cdot Tr + 0.030 \cdot C$	$2.491 + 0.056 \cdot C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050 \cdot C$	$0.467 - 0.011 \cdot Tr + 0.080 \cdot C$	$0.908 - 0.005 \cdot Tr + 0.142 \cdot C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018 \cdot C$	$1.260 + 0.010 \cdot Tr + 0.030 \cdot C$	$2.488 + 0.016 \cdot Tr + 0.056 \cdot C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050 \cdot C$	$0.462 - 0.007 \cdot Tr + 0.080 \cdot C$	$0.909 - 0.005 \cdot Tr + 0.142 \cdot C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018 \cdot C$	$1.261 + 0.005 \cdot Tr + 0.030 \cdot C$	$2.483 + 0.017 \cdot Tr + 0.056 \cdot C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050 \cdot C$	$0.460 + 0.009 \cdot Tr + 0.080 \cdot C$	$0.901 + 0.019 \cdot Tr + 0.143 \cdot C$
ZH-001	$0.595 + 0.018 \cdot C$	$1.075 + 0.001 \cdot Tr + 0.029 \cdot C$	$2.104 - 0.008 \cdot Tr + 0.055 \cdot C$
ZL-001	$0.192 + 0.050 \cdot C$	$0.337 - 0.008 \cdot Tr + 0.081 \cdot C$	$0.652 + 0.005 \cdot Tr + 0.143 \cdot C$
ZH-100	$0.594 + 0.018 \cdot C$	$1.071 + 0.029 \cdot C$	$2.109 - 0.005 \cdot Tr + 0.055 \cdot C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050 \cdot C$	$0.336 - 0.004 \cdot Tr + 0.081 \cdot C$	$0.648 + 0.017 \cdot Tr + 0.143 \cdot C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050 \cdot C$	$0.446 + 0.006 \cdot Tr + 0.080 \cdot C$	$0.878 + 0.004 \cdot Tr + 0.143 \cdot C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018 \cdot C$	$1.259 + 0.030 \cdot C$	$2.475 + 0.004 \cdot Tr + 0.056 \cdot C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050 \cdot C$	$0.450 - 0.007 \cdot Tr + 0.080 \cdot C$	$0.880 + 0.143 \cdot C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018 \cdot C$	$1.262 - 0.007 \cdot Tr + 0.030 \cdot C$	$2.472 + 0.016 \cdot Tr + 0.056 \cdot C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050 \cdot C$	$0.327 - 0.009 \cdot Tr + 0.081 \cdot C$	$0.636 - 0.016 \cdot Tr + 0.144 \cdot C$
R-10000	$0.592 + 0.018 \cdot C$	$1.068 - 0.003 \cdot Tr + 0.029 \cdot C$	$2.099 + 0.055 \cdot C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050 \cdot C$	$0.322 + 0.005 \cdot Tr + 0.081 \cdot C$	$0.638 - 0.019 \cdot Tr + 0.144 \cdot C$
R-00010	$0.591 + 0.018 \cdot C$	$1.067 + 0.029 \cdot C$	$2.096 - 0.002 \cdot Tr + 0.055 \cdot C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD6SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr



## BD6SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD6SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD6SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD6SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$



F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD6SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.051 + 0.233 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.812 + 0.241 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-010	$3.189 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.883 + 0.089 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.312 + 0.126 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-000	$1.344 + 0.185 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.352 + 0.219 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.473 + 0.205 \cdot \text{Tr} + 0.179 \cdot \text{C}$
R-000	$2.738 + 0.034 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.008 + 0.081 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.582 + 0.120 \cdot \text{Tr} + 0.099 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot \text{Tr}$	$1.033 + 0.197 \cdot \text{Tr}$	$1.755 + 0.246 \cdot \text{Tr}$
LZ-10	$0.451 + 0.135 \cdot \text{Tr}$	$0.696 + 0.193 \cdot \text{Tr}$	$1.197 + 0.250 \cdot \text{Tr}$
HZ-00	$0.693 + 0.133 \cdot \text{Tr}$	$1.034 + 0.196 \cdot \text{Tr}$	$1.754 + 0.245 \cdot \text{Tr}$
LZ-00	$0.451 + 0.134 \cdot \text{Tr}$	$0.696 + 0.192 \cdot \text{Tr}$	$1.198 + 0.248 \cdot \text{Tr}$
ZH-10	$3.222 + 0.195 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.953 + 0.236 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.414 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-10	$1.801 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.173 + 0.243 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.040 + 0.286 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-00	$2.763 + 0.200 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.048 + 0.250 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.669 + 0.290 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-00	$1.396 + 0.196 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.440 + 0.256 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.633 + 0.288 \cdot \text{Tr} + 0.179 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot \text{Tr} + 0.194 \cdot \text{C}$	$0.643 + 0.349 \cdot \text{Tr} + 0.244 \cdot \text{C}$	$0.955 + 0.407 \cdot \text{Tr} + 0.371 \cdot \text{C}$
R-1	$0.414 + 0.249 \cdot \text{Tr} + 0.106 \cdot \text{C}$	$0.594 + 0.287 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$0.867 + 0.328 \cdot \text{Tr} + 0.216 \cdot \text{C}$
F-0	$0.419 + 0.101 \cdot \text{Tr} + 0.132 \cdot \text{C}$	$0.626 + 0.144 \cdot \text{Tr} + 0.191 \cdot \text{C}$	$0.954 + 0.203 \cdot \text{Tr} + 0.290 \cdot \text{C}$
R-0	$0.410 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.598 + 0.058 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.882 + 0.104 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.056 + 0.218 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.810 + 0.251 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-101	$3.188 + 0.041 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.884 + 0.089 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.308 + 0.126 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-001	$1.343 + 0.193 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.348 + 0.234 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.463 + 0.246 \cdot \text{Tr} + 0.179 \cdot \text{C}$
R-001	$2.737 + 0.037 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.007 + 0.083 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.579 + 0.134 \cdot \text{Tr} + 0.099 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot \text{Tr}$	$1.032 + 0.196 \cdot \text{Tr}$	$1.754 + 0.244 \cdot \text{Tr}$
LZ-01	$0.451 + 0.137 \cdot \text{Tr}$	$0.695 + 0.192 \cdot \text{Tr}$	$1.196 + 0.246 \cdot \text{Tr}$
HZ-11	$0.692 + 0.136 \cdot \text{Tr}$	$1.031 + 0.196 \cdot \text{Tr}$	$1.755 + 0.241 \cdot \text{Tr}$
LZ-11	$0.451 + 0.136 \cdot \text{Tr}$	$0.695 + 0.194 \cdot \text{Tr}$	$1.197 + 0.246 \cdot \text{Tr}$
ZH-01	$2.763 + 0.198 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.052 + 0.244 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.668 + 0.283 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-01	$1.398 + 0.189 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.444 + 0.246 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.637 + 0.274 \cdot \text{Tr} + 0.179 \cdot \text{C}$
ZH-11	$3.217 + 0.200 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.950 + 0.244 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.410 + 0.313 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-11	$1.805 + 0.195 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.174 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.045 + 0.267 \cdot \text{Tr} + 0.182 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr



## BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.051 + 0.233 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.812 + 0.241 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-010	$3.189 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.883 + 0.089 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.312 + 0.126 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-000	$1.344 + 0.185 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.352 + 0.219 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.473 + 0.205 \cdot \text{Tr} + 0.179 \cdot \text{C}$
R-000	$2.738 + 0.034 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.008 + 0.081 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.582 + 0.120 \cdot \text{Tr} + 0.099 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot \text{Tr}$	$1.033 + 0.197 \cdot \text{Tr}$	$1.755 + 0.246 \cdot \text{Tr}$
LZ-10	$0.451 + 0.135 \cdot \text{Tr}$	$0.696 + 0.193 \cdot \text{Tr}$	$1.197 + 0.250 \cdot \text{Tr}$
HZ-00	$0.693 + 0.133 \cdot \text{Tr}$	$1.034 + 0.196 \cdot \text{Tr}$	$1.754 + 0.245 \cdot \text{Tr}$
LZ-00	$0.451 + 0.134 \cdot \text{Tr}$	$0.696 + 0.192 \cdot \text{Tr}$	$1.198 + 0.248 \cdot \text{Tr}$
ZH-10	$3.222 + 0.195 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.953 + 0.236 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.414 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-10	$1.801 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.173 + 0.243 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.040 + 0.286 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-00	$2.763 + 0.200 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.048 + 0.250 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.669 + 0.290 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-00	$1.396 + 0.196 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.440 + 0.256 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.633 + 0.288 \cdot \text{Tr} + 0.179 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot \text{Tr} + 0.194 \cdot \text{C}$	$0.643 + 0.349 \cdot \text{Tr} + 0.244 \cdot \text{C}$	$0.955 + 0.407 \cdot \text{Tr} + 0.371 \cdot \text{C}$
R-1	$0.414 + 0.249 \cdot \text{Tr} + 0.106 \cdot \text{C}$	$0.594 + 0.287 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$0.867 + 0.328 \cdot \text{Tr} + 0.216 \cdot \text{C}$
F-0	$0.419 + 0.101 \cdot \text{Tr} + 0.132 \cdot \text{C}$	$0.626 + 0.144 \cdot \text{Tr} + 0.191 \cdot \text{C}$	$0.954 + 0.203 \cdot \text{Tr} + 0.290 \cdot \text{C}$
R-0	$0.410 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.598 + 0.058 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.882 + 0.104 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.056 + 0.218 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.810 + 0.251 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-101	$3.188 + 0.041 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.884 + 0.089 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.308 + 0.126 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-001	$1.343 + 0.193 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.348 + 0.234 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.463 + 0.246 \cdot \text{Tr} + 0.179 \cdot \text{C}$
R-001	$2.737 + 0.037 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.007 + 0.083 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.579 + 0.134 \cdot \text{Tr} + 0.099 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot \text{Tr}$	$1.032 + 0.196 \cdot \text{Tr}$	$1.754 + 0.244 \cdot \text{Tr}$
LZ-01	$0.451 + 0.137 \cdot \text{Tr}$	$0.695 + 0.192 \cdot \text{Tr}$	$1.196 + 0.246 \cdot \text{Tr}$
HZ-11	$0.692 + 0.136 \cdot \text{Tr}$	$1.031 + 0.196 \cdot \text{Tr}$	$1.755 + 0.241 \cdot \text{Tr}$
LZ-11	$0.451 + 0.136 \cdot \text{Tr}$	$0.695 + 0.194 \cdot \text{Tr}$	$1.197 + 0.246 \cdot \text{Tr}$
ZH-01	$2.763 + 0.198 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.052 + 0.244 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.668 + 0.283 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-01	$1.398 + 0.189 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.444 + 0.246 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.637 + 0.274 \cdot \text{Tr} + 0.179 \cdot \text{C}$
ZH-11	$3.217 + 0.200 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.950 + 0.244 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.410 + 0.313 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-11	$1.805 + 0.195 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.174 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.045 + 0.267 \cdot \text{Tr} + 0.182 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.051 + 0.233 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.812 + 0.241 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-010	$3.189 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.883 + 0.089 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.312 + 0.126 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-000	$1.344 + 0.185 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.352 + 0.219 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.473 + 0.205 \cdot \text{Tr} + 0.179 \cdot \text{C}$
R-000	$2.738 + 0.034 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.008 + 0.081 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.582 + 0.120 \cdot \text{Tr} + 0.099 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot \text{Tr}$	$1.033 + 0.197 \cdot \text{Tr}$	$1.755 + 0.246 \cdot \text{Tr}$
LZ-10	$0.451 + 0.135 \cdot \text{Tr}$	$0.696 + 0.193 \cdot \text{Tr}$	$1.197 + 0.250 \cdot \text{Tr}$
HZ-00	$0.693 + 0.133 \cdot \text{Tr}$	$1.034 + 0.196 \cdot \text{Tr}$	$1.754 + 0.245 \cdot \text{Tr}$
LZ-00	$0.451 + 0.134 \cdot \text{Tr}$	$0.696 + 0.192 \cdot \text{Tr}$	$1.198 + 0.248 \cdot \text{Tr}$
ZH-10	$3.222 + 0.195 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.953 + 0.236 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.414 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-10	$1.801 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.173 + 0.243 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.040 + 0.286 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-00	$2.763 + 0.200 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.048 + 0.250 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.669 + 0.290 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-00	$1.396 + 0.196 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.440 + 0.256 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.633 + 0.288 \cdot \text{Tr} + 0.179 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot \text{Tr} + 0.194 \cdot \text{C}$	$0.643 + 0.349 \cdot \text{Tr} + 0.244 \cdot \text{C}$	$0.955 + 0.407 \cdot \text{Tr} + 0.371 \cdot \text{C}$
R-1	$0.414 + 0.249 \cdot \text{Tr} + 0.106 \cdot \text{C}$	$0.594 + 0.287 \cdot \text{Tr} + 0.096 \cdot \text{C}$	$0.867 + 0.328 \cdot \text{Tr} + 0.216 \cdot \text{C}$
F-0	$0.419 + 0.101 \cdot \text{Tr} + 0.132 \cdot \text{C}$	$0.626 + 0.144 \cdot \text{Tr} + 0.191 \cdot \text{C}$	$0.954 + 0.203 \cdot \text{Tr} + 0.290 \cdot \text{C}$
R-0	$0.410 + 0.032 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.598 + 0.058 \cdot \text{Tr} + 0.119 \cdot \text{C}$	$0.882 + 0.104 \cdot \text{Tr} + 0.195 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.056 + 0.218 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.810 + 0.251 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-101	$3.188 + 0.041 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.884 + 0.089 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.308 + 0.126 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-001	$1.343 + 0.193 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.348 + 0.234 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.463 + 0.246 \cdot \text{Tr} + 0.179 \cdot \text{C}$
R-001	$2.737 + 0.037 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.007 + 0.083 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.579 + 0.134 \cdot \text{Tr} + 0.099 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot \text{Tr}$	$1.032 + 0.196 \cdot \text{Tr}$	$1.754 + 0.244 \cdot \text{Tr}$
LZ-01	$0.451 + 0.137 \cdot \text{Tr}$	$0.695 + 0.192 \cdot \text{Tr}$	$1.196 + 0.246 \cdot \text{Tr}$
HZ-11	$0.692 + 0.136 \cdot \text{Tr}$	$1.031 + 0.196 \cdot \text{Tr}$	$1.755 + 0.241 \cdot \text{Tr}$
LZ-11	$0.451 + 0.136 \cdot \text{Tr}$	$0.695 + 0.194 \cdot \text{Tr}$	$1.197 + 0.246 \cdot \text{Tr}$
ZH-01	$2.763 + 0.198 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.052 + 0.244 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.668 + 0.283 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-01	$1.398 + 0.189 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.444 + 0.246 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.637 + 0.274 \cdot \text{Tr} + 0.179 \cdot \text{C}$
ZH-11	$3.217 + 0.200 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.950 + 0.244 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.410 + 0.313 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-11	$1.805 + 0.195 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.174 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.045 + 0.267 \cdot \text{Tr} + 0.182 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$



F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr

## BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD6SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0374	0.0364	0.0356
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0328	0.0325	0.0322
HYST Input Cap.	0.0325	0.0322	0.0319
IO Input Cap.	1.4646	1.4620	1.4617
IO Max Load	201.465	201.462	201.462
LOWEMI Input Cap.	0.0265	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0249	0.0246
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0377	0.0367	0.0359
TEN Input Cap.	0.0314	0.0311	0.0308
TM Input Cap.	0.0447	0.0440	0.0438
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.733 + 0.187 \cdot Tr + 0.065 \cdot C$	$3.051 + 0.233 \cdot Tr + 0.103 \cdot C$	$5.812 + 0.241 \cdot Tr + 0.182 \cdot C$
R-010	$3.189 + 0.038 \cdot Tr + 0.033 \cdot C$	$5.883 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.312 + 0.126 \cdot Tr + 0.106 \cdot C$
F-000	$1.344 + 0.185 \cdot Tr + 0.064 \cdot C$	$2.352 + 0.219 \cdot Tr + 0.101 \cdot C$	$4.473 + 0.205 \cdot Tr + 0.179 \cdot C$
R-000	$2.738 + 0.034 \cdot Tr + 0.031 \cdot C$	$5.008 + 0.081 \cdot Tr + 0.052 \cdot C$	$9.582 + 0.120 \cdot Tr + 0.099 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.692 + 0.136 \cdot Tr$	$1.033 + 0.197 \cdot Tr$	$1.755 + 0.246 \cdot Tr$
LZ-10	$0.451 + 0.135 \cdot Tr$	$0.696 + 0.193 \cdot Tr$	$1.197 + 0.250 \cdot Tr$
HZ-00	$0.693 + 0.133 \cdot Tr$	$1.034 + 0.196 \cdot Tr$	$1.754 + 0.245 \cdot Tr$
LZ-00	$0.451 + 0.134 \cdot Tr$	$0.696 + 0.192 \cdot Tr$	$1.198 + 0.248 \cdot Tr$
ZH-10	$3.222 + 0.195 \cdot Tr + 0.033 \cdot C$	$5.953 + 0.236 \cdot Tr + 0.056 \cdot C$	$11.414 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.801 + 0.201 \cdot Tr + 0.065 \cdot C$	$3.173 + 0.243 \cdot Tr + 0.103 \cdot C$	$6.040 + 0.286 \cdot Tr + 0.182 \cdot C$
ZH-00	$2.763 + 0.200 \cdot Tr + 0.031 \cdot C$	$5.048 + 0.250 \cdot Tr + 0.052 \cdot C$	$9.669 + 0.290 \cdot Tr + 0.099 \cdot C$
ZL-00	$1.396 + 0.196 \cdot Tr + 0.064 \cdot C$	$2.440 + 0.256 \cdot Tr + 0.101 \cdot C$	$4.633 + 0.288 \cdot Tr + 0.179 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.440 + 0.290 \cdot Tr + 0.194 \cdot C$	$0.643 + 0.349 \cdot Tr + 0.244 \cdot C$	$0.955 + 0.407 \cdot Tr + 0.371 \cdot C$
R-1	$0.414 + 0.249 \cdot Tr + 0.106 \cdot C$	$0.594 + 0.287 \cdot Tr + 0.096 \cdot C$	$0.867 + 0.328 \cdot Tr + 0.216 \cdot C$
F-0	$0.419 + 0.101 \cdot Tr + 0.132 \cdot C$	$0.626 + 0.144 \cdot Tr + 0.191 \cdot C$	$0.954 + 0.203 \cdot Tr + 0.290 \cdot C$
R-0	$0.410 + 0.032 \cdot Tr + 0.078 \cdot C$	$0.598 + 0.058 \cdot Tr + 0.119 \cdot C$	$0.882 + 0.104 \cdot Tr + 0.195 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.735 + 0.186 \cdot Tr + 0.065 \cdot C$	$3.056 + 0.218 \cdot Tr + 0.103 \cdot C$	$5.810 + 0.251 \cdot Tr + 0.182 \cdot C$
R-101	$3.188 + 0.041 \cdot Tr + 0.033 \cdot C$	$5.884 + 0.089 \cdot Tr + 0.056 \cdot C$	$11.308 + 0.126 \cdot Tr + 0.106 \cdot C$
F-001	$1.343 + 0.193 \cdot Tr + 0.064 \cdot C$	$2.348 + 0.234 \cdot Tr + 0.101 \cdot C$	$4.463 + 0.246 \cdot Tr + 0.179 \cdot C$
R-001	$2.737 + 0.037 \cdot Tr + 0.031 \cdot C$	$5.007 + 0.083 \cdot Tr + 0.052 \cdot C$	$9.579 + 0.134 \cdot Tr + 0.099 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.692 + 0.135 \cdot Tr$	$1.032 + 0.196 \cdot Tr$	$1.754 + 0.244 \cdot Tr$
LZ-01	$0.451 + 0.137 \cdot Tr$	$0.695 + 0.192 \cdot Tr$	$1.196 + 0.246 \cdot Tr$
HZ-11	$0.692 + 0.136 \cdot Tr$	$1.031 + 0.196 \cdot Tr$	$1.755 + 0.241 \cdot Tr$
LZ-11	$0.451 + 0.136 \cdot Tr$	$0.695 + 0.194 \cdot Tr$	$1.197 + 0.246 \cdot Tr$
ZH-01	$2.763 + 0.198 \cdot Tr + 0.031 \cdot C$	$5.052 + 0.244 \cdot Tr + 0.052 \cdot C$	$9.668 + 0.283 \cdot Tr + 0.099 \cdot C$
ZL-01	$1.398 + 0.189 \cdot Tr + 0.064 \cdot C$	$2.444 + 0.246 \cdot Tr + 0.101 \cdot C$	$4.637 + 0.274 \cdot Tr + 0.179 \cdot C$
ZH-11	$3.217 + 0.200 \cdot Tr + 0.034 \cdot C$	$5.950 + 0.244 \cdot Tr + 0.056 \cdot C$	$11.410 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.805 + 0.195 \cdot Tr + 0.065 \cdot C$	$3.174 + 0.238 \cdot Tr + 0.103 \cdot C$	$6.045 + 0.267 \cdot Tr + 0.182 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.688 + 0.165 \cdot \text{Tr}$	$1.026 + 0.228 \cdot \text{Tr}$	$1.746 + 0.295 \cdot \text{Tr}$
LZ-011	$0.285 + 0.055 \cdot \text{Tr}$	$0.428 + 0.117 \cdot \text{Tr}$	$0.716 + 0.187 \cdot \text{Tr}$
HZ-110	$0.707 + 0.223 \cdot \text{Tr}$	$1.055 + 0.258 \cdot \text{Tr}$	$1.790 + 0.295 \cdot \text{Tr}$
LZ-110	$0.304 + 0.238 \cdot \text{Tr}$	$0.460 + 0.273 \cdot \text{Tr}$	$0.762 + 0.314 \cdot \text{Tr}$
HZ-001	$0.689 + 0.162 \cdot \text{Tr}$	$1.031 + 0.219 \cdot \text{Tr}$	$1.744 + 0.303 \cdot \text{Tr}$
LZ-001	$0.285 + 0.059 \cdot \text{Tr}$	$0.428 + 0.122 \cdot \text{Tr}$	$0.715 + 0.193 \cdot \text{Tr}$
HZ-100	$0.707 + 0.222 \cdot \text{Tr}$	$1.058 + 0.253 \cdot \text{Tr}$	$1.787 + 0.301 \cdot \text{Tr}$
LZ-100	$0.304 + 0.238 \cdot \text{Tr}$	$0.459 + 0.276 \cdot \text{Tr}$	$0.763 + 0.312 \cdot \text{Tr}$
ZH-011	$3.220 + 0.223 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.945 + 0.271 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.400 + 0.333 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.799 + 0.232 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.169 + 0.273 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.033 + 0.316 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-110	$3.226 + 0.013 \cdot \text{Tr} + 0.034 \cdot \text{C}$	$5.961 + 0.054 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.429 + 0.092 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.816 + 0.018 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.181 + 0.092 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$6.053 + 0.137 \cdot \text{Tr} + 0.182 \cdot \text{C}$
ZH-001	$2.760 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.042 + 0.287 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.659 + 0.332 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-001	$1.395 + 0.222 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.441 + 0.279 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.631 + 0.314 \cdot \text{Tr} + 0.178 \cdot \text{C}$
ZH-100	$2.770 + 0.009 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.063 + 0.051 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.685 + 0.081 \cdot \text{Tr} + 0.099 \cdot \text{C}$
ZL-100	$1.409 + 0.009 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.458 + 0.077 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.655 + 0.131 \cdot \text{Tr} + 0.179 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.741 + 0.010 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.060 + 0.068 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.826 + 0.101 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-10100	$3.207 + 0.230 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.910 + 0.270 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.346 + 0.301 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.730 + 0.201 \cdot \text{Tr} + 0.065 \cdot \text{C}$	$3.046 + 0.238 \cdot \text{Tr} + 0.103 \cdot \text{C}$	$5.805 + 0.247 \cdot \text{Tr} + 0.182 \cdot \text{C}$
R-00110	$3.186 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$5.880 + 0.093 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$11.303 + 0.139 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.352 + 0.012 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.364 + 0.047 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.483 + 0.082 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-10000	$2.755 + 0.230 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.032 + 0.270 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.618 + 0.309 \cdot \text{Tr} + 0.099 \cdot \text{C}$
F-00010	$1.338 + 0.207 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$2.344 + 0.242 \cdot \text{Tr} + 0.101 \cdot \text{C}$	$4.467 + 0.223 \cdot \text{Tr} + 0.178 \cdot \text{C}$
R-00010	$2.734 + 0.036 \cdot \text{Tr} + 0.031 \cdot \text{C}$	$5.002 + 0.089 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$9.577 + 0.132 \cdot \text{Tr} + 0.099 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.256 + 0.002 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.447 - 0.002 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.883 - 0.007 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-010	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.263 - 0.008 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.468 + 0.016 \cdot \text{Tr} + 0.056 \cdot \text{C}$
F-000	$0.186 + 0.001 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.323 - 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.639 - 0.030 \cdot \text{Tr} + 0.144 \cdot \text{C}$
R-000	$0.592 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.068 - 0.003 \cdot \text{Tr} + 0.029 \cdot \text{C}$	$2.097 + 0.002 \cdot \text{Tr} + 0.055 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.696 + 0.018 \cdot \text{C}$	$1.262 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.486 + 0.002 \cdot \text{Tr} + 0.056 \cdot \text{C}$
ZL-10	$0.263 + 0.003 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.460 - 0.006 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.907 + 0.143 \cdot \text{C}$
ZH-00	$0.596 + 0.018 \cdot \text{C}$	$1.075 + 0.029 \cdot \text{C}$	$2.102 + 0.005 \cdot \text{Tr} + 0.055 \cdot \text{C}$
ZL-00	$0.193 + 0.050 \cdot \text{C}$	$0.334 + 0.003 \cdot \text{Tr} + 0.081 \cdot \text{C}$	$0.653 - 0.001 \cdot \text{Tr} + 0.144 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.005 + 0.102 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.011 + 0.229 \cdot \text{C}$
R-1	$0.004 + 0.056 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
F-0	$0.005 + 0.101 \cdot \text{C}$	$0.007 + 0.149 \cdot \text{C}$	$0.012 + 0.229 \cdot \text{C}$
R-0	$0.004 + 0.055 \cdot \text{C}$	$0.006 + 0.089 \cdot \text{C}$	$0.010 + 0.146 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.258 - 0.006 \cdot \text{Tr} + 0.050 \cdot \text{C}$	$0.450 - 0.004 \cdot \text{Tr} + 0.080 \cdot \text{C}$	$0.872 + 0.014 \cdot \text{Tr} + 0.143 \cdot \text{C}$
R-101	$0.693 - 0.002 \cdot \text{Tr} + 0.018 \cdot \text{C}$	$1.259 + 0.001 \cdot \text{Tr} + 0.030 \cdot \text{C}$	$2.474 + 0.009 \cdot \text{Tr} + 0.056 \cdot \text{C}$

F-001	$0.185 + 0.006 \cdot Tr + 0.050^{\circ}C$	$0.320 + 0.019 \cdot Tr + 0.081^{\circ}C$	$0.633 + 0.002 \cdot Tr + 0.144^{\circ}C$
R-001	$0.592 + 0.018^{\circ}C$	$1.069 - 0.004 \cdot Tr + 0.029^{\circ}C$	$2.097 + 0.003 \cdot Tr + 0.055^{\circ}C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.596 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.073 - 0.002 \cdot Tr + 0.029^{\circ}C$	$2.106 + 0.003 \cdot Tr + 0.055^{\circ}C$
ZL-01	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.335 + 0.081^{\circ}C$	$0.653 - 0.010 \cdot Tr + 0.144^{\circ}C$
ZH-11	$0.700 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.002 \cdot Tr + 0.030^{\circ}C$	$2.491 + 0.056^{\circ}C$
ZL-11	$0.266 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.467 - 0.011 \cdot Tr + 0.080^{\circ}C$	$0.908 - 0.005 \cdot Tr + 0.142^{\circ}C$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.695 + 0.018^{\circ}C$	$1.260 + 0.010 \cdot Tr + 0.030^{\circ}C$	$2.488 + 0.016 \cdot Tr + 0.056^{\circ}C$
ZL-011	$0.263 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.462 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.909 - 0.005 \cdot Tr + 0.142^{\circ}C$
ZH-110	$0.698 - 0.003 \cdot Tr + 0.018^{\circ}C$	$1.261 + 0.005 \cdot Tr + 0.030^{\circ}C$	$2.483 + 0.017 \cdot Tr + 0.056^{\circ}C$
ZL-110	$0.265 - 0.003 \cdot Tr + 0.050^{\circ}C$	$0.460 + 0.009 \cdot Tr + 0.080^{\circ}C$	$0.901 + 0.019 \cdot Tr + 0.143^{\circ}C$
ZH-001	$0.595 + 0.018^{\circ}C$	$1.075 + 0.001 \cdot Tr + 0.029^{\circ}C$	$2.104 - 0.008 \cdot Tr + 0.055^{\circ}C$
ZL-001	$0.192 + 0.050^{\circ}C$	$0.337 - 0.008 \cdot Tr + 0.081^{\circ}C$	$0.652 + 0.005 \cdot Tr + 0.143^{\circ}C$
ZH-100	$0.594 + 0.018^{\circ}C$	$1.071 + 0.029^{\circ}C$	$2.109 - 0.005 \cdot Tr + 0.055^{\circ}C$
ZL-100	$0.193 - 0.005 \cdot Tr + 0.050^{\circ}C$	$0.336 - 0.004 \cdot Tr + 0.081^{\circ}C$	$0.648 + 0.017 \cdot Tr + 0.143^{\circ}C$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.256 + 0.002 \cdot Tr + 0.050^{\circ}C$	$0.446 + 0.006 \cdot Tr + 0.080^{\circ}C$	$0.878 + 0.004 \cdot Tr + 0.143^{\circ}C$
R-10100	$0.693 + 0.001 \cdot Tr + 0.018^{\circ}C$	$1.259 + 0.030^{\circ}C$	$2.475 + 0.004 \cdot Tr + 0.056^{\circ}C$
F-00110	$0.258 - 0.001 \cdot Tr + 0.050^{\circ}C$	$0.450 - 0.007 \cdot Tr + 0.080^{\circ}C$	$0.880 + 0.143^{\circ}C$
R-00110	$0.693 - 0.002 \cdot Tr + 0.018^{\circ}C$	$1.262 - 0.007 \cdot Tr + 0.030^{\circ}C$	$2.472 + 0.016 \cdot Tr + 0.056^{\circ}C$
F-10000	$0.186 + 0.001 \cdot Tr + 0.050^{\circ}C$	$0.327 - 0.009 \cdot Tr + 0.081^{\circ}C$	$0.636 - 0.016 \cdot Tr + 0.144^{\circ}C$
R-10000	$0.592 + 0.018^{\circ}C$	$1.068 - 0.003 \cdot Tr + 0.029^{\circ}C$	$2.099 + 0.055^{\circ}C$
F-00010	$0.185 + 0.003 \cdot Tr + 0.050^{\circ}C$	$0.322 + 0.005 \cdot Tr + 0.081^{\circ}C$	$0.638 - 0.019 \cdot Tr + 0.144^{\circ}C$
R-00010	$0.591 + 0.018^{\circ}C$	$1.067 + 0.029^{\circ}C$	$2.096 - 0.002 \cdot Tr + 0.055^{\circ}C$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	7.893e-07
typ 1.00 25	2.760e-05	3.951e-06
worst 0.90 125	3.633e-04	9.228e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.454 + 0.131*Tr	0.573 + 0.408*Tr	0.354 + 0.058*Tr	0.451 + 0.192*Tr	0.283 + 0.040*Tr	0.359 + 0.131*Tr
ZI toggling	0.256	0.257 + 0.002*Tr	0.200	0.200 + 0.001*Tr	0.160	0.159 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.047 + 0.039*Tr	4.653 + 0.021*Tr	3.240	3.676 + 0.061*Tr	2.561 + 0.020*Tr	2.917 - 0.001*Tr
ZI toggling	0.173 + 0.055*Tr	0.267 + 0.151*Tr	0.134 + 0.018*Tr	0.193 + 0.062*Tr	0.105 + 0.008*Tr	0.140 + 0.026*Tr



## BD8SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD8SCARUDQPCH\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.312 + 0.225 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.316 + 0.232 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-010	$3.836 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.102 + 0.080 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.624 + 0.121 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-000	$1.322 + 0.183 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.314 + 0.215 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.379 + 0.244 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-000	$2.582 + 0.037 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.749 + 0.085 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.108 + 0.122 \cdot \text{Tr} + 0.084 \cdot \text{C}$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot \text{Tr}$	$1.151 + 0.191 \cdot \text{Tr}$	$1.952 + 0.250 \cdot \text{Tr}$
LZ-10	$0.454 + 0.135 \cdot \text{Tr}$	$0.700 + 0.191 \cdot \text{Tr}$	$1.203 + 0.249 \cdot \text{Tr}$
HZ-00	$0.775 + 0.126 \cdot \text{Tr}$	$1.151 + 0.188 \cdot \text{Tr}$	$1.947 + 0.261 \cdot \text{Tr}$
LZ-00	$0.454 + 0.134 \cdot \text{Tr}$	$0.699 + 0.194 \cdot \text{Tr}$	$1.202 + 0.251 \cdot \text{Tr}$
ZH-10	$3.872 + 0.198 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.164 + 0.243 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.730 + 0.313 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-10	$1.936 + 0.196 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.252 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.554 + 0.276 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-00	$2.600 + 0.199 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.780 + 0.254 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.163 + 0.287 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-00	$1.356 + 0.195 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.387 + 0.250 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.534 + 0.279 \cdot \text{Tr} + 0.139 \cdot \text{C}$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot \text{Tr} + 0.169 \cdot \text{C}$	$0.650 + 0.348 \cdot \text{Tr} + 0.024 \cdot \text{C}$	$0.948 + 0.405 \cdot \text{Tr} + 0.346 \cdot \text{C}$
R-1	$0.413 + 0.250 \cdot \text{Tr} + 0.064 \cdot \text{C}$	$0.590 + 0.288 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$0.867 + 0.325 \cdot \text{Tr} + 0.216 \cdot \text{C}$
F-0	$0.416 + 0.100 \cdot \text{Tr} + 0.137 \cdot \text{C}$	$0.620 + 0.143 \cdot \text{Tr} + 0.199 \cdot \text{C}$	$0.946 + 0.202 \cdot \text{Tr} + 0.302 \cdot \text{C}$
R-0	$0.407 + 0.032 \cdot \text{Tr} + 0.084 \cdot \text{C}$	$0.594 + 0.058 \cdot \text{Tr} + 0.128 \cdot \text{C}$	$0.876 + 0.103 \cdot \text{Tr} + 0.207 \cdot \text{C}$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.312 + 0.218 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.313 + 0.252 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-101	$3.836 + 0.037 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.103 + 0.078 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.621 + 0.122 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-001	$1.322 + 0.190 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.311 + 0.222 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.388 + 0.227 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-001	$2.581 + 0.041 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.747 + 0.089 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.107 + 0.134 \cdot \text{Tr} + 0.084 \cdot \text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot \text{Tr}$	$1.149 + 0.190 \cdot \text{Tr}$	$1.945 + 0.263 \cdot \text{Tr}$
LZ-01	$0.454 + 0.135 \cdot \text{Tr}$	$0.699 + 0.193 \cdot \text{Tr}$	$1.202 + 0.252 \cdot \text{Tr}$
HZ-11	$0.774 + 0.128 \cdot \text{Tr}$	$1.150 + 0.193 \cdot \text{Tr}$	$1.950 + 0.253 \cdot \text{Tr}$
LZ-11	$0.454 + 0.134 \cdot \text{Tr}$	$0.699 + 0.193 \cdot \text{Tr}$	$1.202 + 0.248 \cdot \text{Tr}$
ZH-01	$2.600 + 0.197 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.779 + 0.246 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.169 + 0.281 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-01	$1.357 + 0.196 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.388 + 0.245 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.541 + 0.261 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-11	$3.871 + 0.200 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.163 + 0.243 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.730 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-11	$1.936 + 0.201 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.434 + 0.250 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.560 + 0.254 \cdot \text{Tr} + 0.147 \cdot \text{C}$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD8SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD8SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$



F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD8SCARUDQPCH\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr



## BD8SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD8SCARUDQPCL\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD8SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD8SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$



F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD8SCARUDQPCL\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont\_use" attribute set in the Synopsys STF.
- The cell has "dont\_touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr



## BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

### Cell Description

BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_CL\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 4252.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

### Cell Description

BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_INNER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08



IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

### Cell Description

BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_LIN

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 3632.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$



F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr

## BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

### Cell Description

BD8SCARUDQPCZ\_EXT\_CSF\_1V8\_FC\_OUTER

- The cell has "dont.use" attribute set in the Synopsys STF.
- The cell has "dont.touch" attribute set in the Synopsys STF.

### Physical Dimensions

Area(um2) : 8307.000

### Glossary

Tr : Input Transition time  
C : Output (capacitive) load  
R : Rising edge  
F : Falling edge

### Logical Symbol



### Truth Table

IO	ZI
IO	IO

A	EN	TA	TEN	TM	PUN	PDN	PUN15K	IO
A	0	-	-	0	-	-	-	A
-	-	TA	0	1	-	-	-	TA
-	1	-	-	0	-	1	0	H
-	1	-	-	0	0	1	-	H
-	-	-	1	1	-	1	0	H
-	-	-	1	1	0	1	-	H
-	-	-	1	1	1	0	1	L
-	1	-	-	0	1	0	1	L
-	1	-	-	0	0	0	-	W
-	1	-	-	0	-	0	0	W
-	-	-	1	1	0	0	-	W
-	-	-	1	1	-	0	0	W
-	-	-	1	1	1	1	1	Z
-	1	-	-	0	1	1	1	Z

### Cell Capacitance

Parameter	Value(pF)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125

A Input Cap.	0.0258	0.0248	0.0240
ASRCN1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000	10000.000
EN Input Cap.	0.0196	0.0193	0.0190
HYST Input Cap.	0.0146	0.0143	0.0141
IO Input Cap.	1.5356	1.5322	1.5312
IO Max Load	201.536	201.532	201.531
LOWEMI Input Cap.	0.0107	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0098	0.0096
REFIOA1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000	10000.000
TA Input Cap.	0.0268	0.0258	0.0250
TEN Input Cap.	0.0184	0.0180	0.0178
TM Input Cap.	0.0331	0.0324	0.0323
ZI Max Load	0.200	0.200	0.200

### Special Pin Properties

Pin	Parameter	Value		
		best 1.10	typ 1.00	worst 0.90
IO (Input)	Min Transition (ns)	0.375	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08

IO (Input)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Input)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Input)	Slope thres. low (V)	-	-	-
IO (Input)	Slope thres. high (V)	-	-	-
IO (Output)	Min Transition (ns)	-	-	-
IO (Output)	Max Transition (ns)	-	-	-
IO (Output)	Swing (V)	0.0 - 1.32	0.0 - 1.2	0.0 - 1.08
IO (Output)	Delay thres. rising (V)	0.66	0.6	0.54
IO (Output)	Delay thres. falling (V)	0.66	0.6	0.54
IO (Output)	Slope thres. low (V)	0.396	0.36	0.324
IO (Output)	Slope thres. high (V)	0.924	0.84	0.756

### Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
<b>Path A-IO (for pins EN LOWEMI TM )</b>			
F-010	$1.868 + 0.186 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.225 \cdot Tr + 0.082 \cdot C$	$6.316 + 0.232 \cdot Tr + 0.147 \cdot C$
R-010	$3.836 + 0.038 \cdot Tr + 0.033 \cdot C$	$7.102 + 0.080 \cdot Tr + 0.056 \cdot C$	$13.624 + 0.121 \cdot Tr + 0.106 \cdot C$
F-000	$1.322 + 0.183 \cdot Tr + 0.049 \cdot C$	$2.314 + 0.215 \cdot Tr + 0.078 \cdot C$	$4.379 + 0.244 \cdot Tr + 0.139 \cdot C$
R-000	$2.582 + 0.037 \cdot Tr + 0.026 \cdot C$	$4.749 + 0.085 \cdot Tr + 0.044 \cdot C$	$9.108 + 0.122 \cdot Tr + 0.084 \cdot C$
<b>Path EN-IO (for pins LOWEMI TM )</b>			
HZ-10	$0.775 + 0.127 \cdot Tr$	$1.151 + 0.191 \cdot Tr$	$1.952 + 0.250 \cdot Tr$
LZ-10	$0.454 + 0.135 \cdot Tr$	$0.700 + 0.191 \cdot Tr$	$1.203 + 0.249 \cdot Tr$
HZ-00	$0.775 + 0.126 \cdot Tr$	$1.151 + 0.188 \cdot Tr$	$1.947 + 0.261 \cdot Tr$
LZ-00	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.194 \cdot Tr$	$1.202 + 0.251 \cdot Tr$
ZH-10	$3.872 + 0.198 \cdot Tr + 0.033 \cdot C$	$7.164 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.313 \cdot Tr + 0.106 \cdot C$
ZL-10	$1.936 + 0.196 \cdot Tr + 0.052 \cdot C$	$3.429 + 0.252 \cdot Tr + 0.082 \cdot C$	$6.554 + 0.276 \cdot Tr + 0.147 \cdot C$
ZH-00	$2.600 + 0.199 \cdot Tr + 0.026 \cdot C$	$4.780 + 0.254 \cdot Tr + 0.045 \cdot C$	$9.163 + 0.287 \cdot Tr + 0.084 \cdot C$
ZL-00	$1.356 + 0.195 \cdot Tr + 0.049 \cdot C$	$2.387 + 0.250 \cdot Tr + 0.078 \cdot C$	$4.534 + 0.279 \cdot Tr + 0.139 \cdot C$
<b>Path IO-ZI (for pins HYST )</b>			
F-1	$0.434 + 0.290 \cdot Tr + 0.169 \cdot C$	$0.650 + 0.348 \cdot Tr + 0.024 \cdot C$	$0.948 + 0.405 \cdot Tr + 0.346 \cdot C$
R-1	$0.413 + 0.250 \cdot Tr + 0.064 \cdot C$	$0.590 + 0.288 \cdot Tr + 0.078 \cdot C$	$0.867 + 0.325 \cdot Tr + 0.216 \cdot C$
F-0	$0.416 + 0.100 \cdot Tr + 0.137 \cdot C$	$0.620 + 0.143 \cdot Tr + 0.199 \cdot C$	$0.946 + 0.202 \cdot Tr + 0.302 \cdot C$
R-0	$0.407 + 0.032 \cdot Tr + 0.084 \cdot C$	$0.594 + 0.058 \cdot Tr + 0.128 \cdot C$	$0.876 + 0.103 \cdot Tr + 0.207 \cdot C$
<b>Path TA-IO (for pins LOWEMI TEN TM )</b>			
F-101	$1.868 + 0.193 \cdot Tr + 0.052 \cdot C$	$3.312 + 0.218 \cdot Tr + 0.082 \cdot C$	$6.313 + 0.252 \cdot Tr + 0.147 \cdot C$
R-101	$3.836 + 0.037 \cdot Tr + 0.033 \cdot C$	$7.103 + 0.078 \cdot Tr + 0.056 \cdot C$	$13.621 + 0.122 \cdot Tr + 0.106 \cdot C$
F-001	$1.322 + 0.190 \cdot Tr + 0.049 \cdot C$	$2.311 + 0.222 \cdot Tr + 0.078 \cdot C$	$4.388 + 0.227 \cdot Tr + 0.139 \cdot C$
R-001	$2.581 + 0.041 \cdot Tr + 0.026 \cdot C$	$4.747 + 0.089 \cdot Tr + 0.044 \cdot C$	$9.107 + 0.134 \cdot Tr + 0.084 \cdot C$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	$0.773 + 0.128 \cdot Tr$	$1.149 + 0.190 \cdot Tr$	$1.945 + 0.263 \cdot Tr$
LZ-01	$0.454 + 0.135 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.252 \cdot Tr$
HZ-11	$0.774 + 0.128 \cdot Tr$	$1.150 + 0.193 \cdot Tr$	$1.950 + 0.253 \cdot Tr$
LZ-11	$0.454 + 0.134 \cdot Tr$	$0.699 + 0.193 \cdot Tr$	$1.202 + 0.248 \cdot Tr$
ZH-01	$2.600 + 0.197 \cdot Tr + 0.026 \cdot C$	$4.779 + 0.246 \cdot Tr + 0.045 \cdot C$	$9.169 + 0.281 \cdot Tr + 0.084 \cdot C$
ZL-01	$1.357 + 0.196 \cdot Tr + 0.049 \cdot C$	$2.388 + 0.245 \cdot Tr + 0.078 \cdot C$	$4.541 + 0.261 \cdot Tr + 0.139 \cdot C$
ZH-11	$3.871 + 0.200 \cdot Tr + 0.033 \cdot C$	$7.163 + 0.243 \cdot Tr + 0.056 \cdot C$	$13.730 + 0.306 \cdot Tr + 0.106 \cdot C$
ZL-11	$1.936 + 0.201 \cdot Tr + 0.052 \cdot C$	$3.434 + 0.250 \cdot Tr + 0.082 \cdot C$	$6.560 + 0.254 \cdot Tr + 0.147 \cdot C$

Path TM-IO (for pins EN LOWEMI TEN )			
HZ-011	$0.769 + 0.155 \cdot \text{Tr}$	$1.145 + 0.229 \cdot \text{Tr}$	$1.940 + 0.305 \cdot \text{Tr}$
LZ-011	$0.289 + 0.054 \cdot \text{Tr}$	$0.433 + 0.118 \cdot \text{Tr}$	$0.722 + 0.191 \cdot \text{Tr}$
HZ-110	$0.789 + 0.224 \cdot \text{Tr}$	$1.175 + 0.258 \cdot \text{Tr}$	$1.989 + 0.297 \cdot \text{Tr}$
LZ-110	$0.308 + 0.238 \cdot \text{Tr}$	$0.463 + 0.276 \cdot \text{Tr}$	$0.769 + 0.315 \cdot \text{Tr}$
HZ-001	$0.772 + 0.154 \cdot \text{Tr}$	$1.146 + 0.227 \cdot \text{Tr}$	$1.942 + 0.281 \cdot \text{Tr}$
LZ-001	$0.289 + 0.058 \cdot \text{Tr}$	$0.432 + 0.123 \cdot \text{Tr}$	$0.722 + 0.195 \cdot \text{Tr}$
HZ-100	$0.787 + 0.228 \cdot \text{Tr}$	$1.174 + 0.260 \cdot \text{Tr}$	$1.981 + 0.301 \cdot \text{Tr}$
LZ-100	$0.307 + 0.238 \cdot \text{Tr}$	$0.463 + 0.274 \cdot \text{Tr}$	$0.768 + 0.316 \cdot \text{Tr}$
ZH-011	$3.869 + 0.229 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.157 + 0.281 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.722 + 0.342 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-011	$1.935 + 0.222 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.429 + 0.276 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.548 + 0.313 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-110	$3.877 + 0.011 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.175 + 0.057 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.752 + 0.099 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZL-110	$1.946 + 0.023 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.448 + 0.081 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.578 + 0.117 \cdot \text{Tr} + 0.147 \cdot \text{C}$
ZH-001	$2.598 + 0.230 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.774 + 0.282 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.152 + 0.341 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-001	$1.355 + 0.223 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.385 + 0.276 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.538 + 0.314 \cdot \text{Tr} + 0.139 \cdot \text{C}$
ZH-100	$2.608 + 0.010 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.790 + 0.057 \cdot \text{Tr} + 0.045 \cdot \text{C}$	$9.183 + 0.101 \cdot \text{Tr} + 0.084 \cdot \text{C}$
ZL-100	$1.367 + 0.015 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.403 + 0.077 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.569 + 0.107 \cdot \text{Tr} + 0.139 \cdot \text{C}$
Path TM-IO (for pins A EN LOWEMI TA TEN )			
F-10100	$1.874 + 0.014 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.324 + 0.054 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.332 + 0.089 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-10100	$3.854 + 0.231 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.128 + 0.260 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.659 + 0.306 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-00110	$1.861 + 0.208 \cdot \text{Tr} + 0.052 \cdot \text{C}$	$3.307 + 0.234 \cdot \text{Tr} + 0.082 \cdot \text{C}$	$6.307 + 0.258 \cdot \text{Tr} + 0.147 \cdot \text{C}$
R-00110	$3.833 + 0.038 \cdot \text{Tr} + 0.033 \cdot \text{C}$	$7.098 + 0.086 \cdot \text{Tr} + 0.056 \cdot \text{C}$	$13.616 + 0.134 \cdot \text{Tr} + 0.106 \cdot \text{C}$
F-10000	$1.329 + 0.010 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.321 + 0.059 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.395 + 0.096 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-10000	$2.598 + 0.233 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.773 + 0.264 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.145 + 0.306 \cdot \text{Tr} + 0.084 \cdot \text{C}$
F-00010	$1.317 + 0.204 \cdot \text{Tr} + 0.049 \cdot \text{C}$	$2.305 + 0.241 \cdot \text{Tr} + 0.078 \cdot \text{C}$	$4.368 + 0.272 \cdot \text{Tr} + 0.139 \cdot \text{C}$
R-00010	$2.578 + 0.038 \cdot \text{Tr} + 0.026 \cdot \text{C}$	$4.746 + 0.091 \cdot \text{Tr} + 0.044 \cdot \text{C}$	$9.100 + 0.143 \cdot \text{Tr} + 0.084 \cdot \text{C}$

## Transition Time

Event	Value (as a function of C in pF and Tr in nS)		
	best 1.10 -40	typ 1.00 25	worst 0.90 125
Path A-IO (for pins EN LOWEMI TM )			
F-010	$0.344 + 0.037 \cdot \text{C}$	$0.602 - 0.004 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.175 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-010	$0.880 - 0.005 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.605 + 0.003 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.137 - 0.002 \cdot \text{Tr} + 0.047 \cdot \text{C}$
F-000	$0.212 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.378 - 0.001 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.736 + 0.009 \cdot \text{Tr} + 0.108 \cdot \text{C}$
R-000	$0.575 - 0.002 \cdot \text{Tr} + 0.014 \cdot \text{C}$	$1.046 - 0.004 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.050 + 0.003 \cdot \text{Tr} + 0.043 \cdot \text{C}$
Path EN-IO (for pins LOWEMI TM )			
HZ-10	0.000	0.000	0.000
LZ-10	0.000	0.000	0.000
HZ-00	0.000	0.000	0.000
LZ-00	0.000	0.000	0.000
ZH-10	$0.884 - 0.003 \cdot \text{Tr} + 0.015 \cdot \text{C}$	$1.613 + 0.004 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.162 - 0.009 \cdot \text{Tr} + 0.047 \cdot \text{C}$
ZL-10	$0.354 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.615 + 0.005 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.207 - 0.004 \cdot \text{Tr} + 0.106 \cdot \text{C}$
ZH-00	$0.577 + 0.014 \cdot \text{C}$	$1.053 - 0.006 \cdot \text{Tr} + 0.023 \cdot \text{C}$	$2.064 + 0.002 \cdot \text{Tr} + 0.043 \cdot \text{C}$
ZL-00	$0.224 - 0.002 \cdot \text{Tr} + 0.038 \cdot \text{C}$	$0.393 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$0.760 + 0.108 \cdot \text{C}$
Path IO-ZI (for pins HYST )			
F-1	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-1	$0.003 + 0.057 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
F-0	$0.004 + 0.101 \cdot \text{C}$	$0.005 + 0.148 \cdot \text{C}$	$0.008 + 0.229 \cdot \text{C}$
R-0	$0.003 + 0.058 \cdot \text{C}$	$0.005 + 0.089 \cdot \text{C}$	$0.007 + 0.147 \cdot \text{C}$
Path TA-IO (for pins LOWEMI TEN TM )			
F-101	$0.344 - 0.003 \cdot \text{Tr} + 0.037 \cdot \text{C}$	$0.602 - 0.003 \cdot \text{Tr} + 0.060 \cdot \text{C}$	$1.172 + 0.009 \cdot \text{Tr} + 0.106 \cdot \text{C}$
R-101	$0.878 + 0.015 \cdot \text{C}$	$1.601 + 0.011 \cdot \text{Tr} + 0.025 \cdot \text{C}$	$3.135 + 0.003 \cdot \text{Tr} + 0.047 \cdot \text{C}$

F-001	$0.212 + 0.038^{\circ}\text{C}$	$0.374 + 0.005^{\circ}\text{Tr} + 0.061^{\circ}\text{C}$	$0.739 - 0.003^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-001	$0.574 - 0.001^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.047 - 0.003^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.051 - 0.011^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
<b>Path TEN-IO (for pins LOWEMI TM )</b>			
HZ-01	0.000	0.000	0.000
LZ-01	0.000	0.000	0.000
HZ-11	0.000	0.000	0.000
LZ-11	0.000	0.000	0.000
ZH-01	$0.577 + 0.003^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.055 - 0.002^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.059 + 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-01	$0.224 + 0.038^{\circ}\text{C}$	$0.392 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.760 - 0.010^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
ZH-11	$0.885 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.165 - 0.010^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-11	$0.354 - 0.003^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.616 - 0.002^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.215 - 0.017^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
<b>Path TM-IO (for pins EN LOWEMI TEN )</b>			
HZ-011	0.000	0.000	0.000
LZ-011	0.000	0.000	0.000
HZ-110	0.000	0.000	0.000
LZ-110	0.000	0.000	0.000
HZ-001	0.000	0.000	0.000
LZ-001	0.000	0.000	0.000
HZ-100	0.000	0.000	0.000
LZ-100	0.000	0.000	0.000
ZH-011	$0.883 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.614 + 0.025^{\circ}\text{C}$	$3.158 - 0.006^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-011	$0.354 - 0.005^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.209 - 0.002^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-110	$0.884 - 0.003^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.611 + 0.004^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.159 - 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
ZL-110	$0.354 - 0.004^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.618 - 0.001^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.207 - 0.013^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
ZH-001	$0.577 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.063 - 0.013^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-001	$0.224 + 0.038^{\circ}\text{C}$	$0.394 - 0.004^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.756 + 0.017^{\circ}\text{Tr} + 0.107^{\circ}\text{C}$
ZH-100	$0.576 + 0.014^{\circ}\text{C}$	$1.053 - 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.057 - 0.004^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
ZL-100	$0.223 + 0.038^{\circ}\text{C}$	$0.390 + 0.060^{\circ}\text{C}$	$0.759 + 0.107^{\circ}\text{C}$
<b>Path TM-IO (for pins A EN LOWEMI TA TEN )</b>			
F-10100	$0.344 - 0.002^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.596 + 0.008^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 - 0.008^{\circ}\text{Tr} + 0.106^{\circ}\text{C}$
R-10100	$0.878 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.602 + 0.013^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.135 - 0.005^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-00110	$0.342 + 0.001^{\circ}\text{Tr} + 0.037^{\circ}\text{C}$	$0.599 + 0.010^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$1.177 + 0.106^{\circ}\text{C}$
R-00110	$0.879 - 0.002^{\circ}\text{Tr} + 0.015^{\circ}\text{C}$	$1.604 + 0.009^{\circ}\text{Tr} + 0.025^{\circ}\text{C}$	$3.136 + 0.007^{\circ}\text{Tr} + 0.047^{\circ}\text{C}$
F-10000	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.376 + 0.060^{\circ}\text{C}$	$0.736 + 0.005^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-10000	$0.575 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.046 + 0.004^{\circ}\text{Tr} + 0.023^{\circ}\text{C}$	$2.050 - 0.007^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$
F-00010	$0.212 - 0.001^{\circ}\text{Tr} + 0.038^{\circ}\text{C}$	$0.375 + 0.007^{\circ}\text{Tr} + 0.060^{\circ}\text{C}$	$0.735 + 0.009^{\circ}\text{Tr} + 0.108^{\circ}\text{C}$
R-00010	$0.574 - 0.002^{\circ}\text{Tr} + 0.014^{\circ}\text{C}$	$1.044 + 0.023^{\circ}\text{C}$	$2.052 - 0.002^{\circ}\text{Tr} + 0.043^{\circ}\text{C}$

**Default Leakage Power**

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 -40	4.383e-05	8.183e-07
typ 1.00 25	2.760e-05	4.269e-06
worst 0.90 125	3.633e-04	9.983e-05

**Internal Energy (at minimum output load)**

Pin Cycle	Internal Energy (uW/MHz)					
	best 1.10 -40 (Min values)	best 1.10 -40 (Max values)	typ 1.00 25 (Min values)	typ 1.00 25 (Max values)	worst 0.90 125 (Min values)	worst 0.90 125 (Max values)
<b>For vdd</b>						

IO toggling/ Output stable	0.430 + 0.131*Tr	0.550 + 0.407*Tr	0.333 + 0.059*Tr	0.432 + 0.191*Tr	0.266 + 0.041*Tr	0.344 + 0.131*Tr
ZI toggling	0.235	0.237 + 0.002*Tr	0.182	0.182 + 0.001*Tr	0.145	0.145 + 0.001*Tr
<b>For vdde1v8</b>						
IO toggling/ Output stable	4.386 - 0.007*Tr	5.142 - 0.012*Tr	3.480 - 0.001*Tr	3.990 + 0.011*Tr	2.761 - 0.042*Tr	3.139 - 0.030*Tr
ZI toggling	0.173 + 0.055*Tr	0.261 + 0.153*Tr	0.133 + 0.018*Tr	0.192 + 0.062*Tr	0.105 + 0.008*Tr	0.139 + 0.026*Tr





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