C28SOI_IO_EXT_3V3SF_GPIO3V3_FSNFS_LR_EG Databook

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.

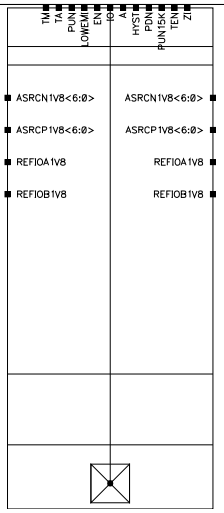
Physical Dimensions

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 1.10 125	**worst 0.90 -40**
A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261

PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65
IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		

F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr
LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000

LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000
LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

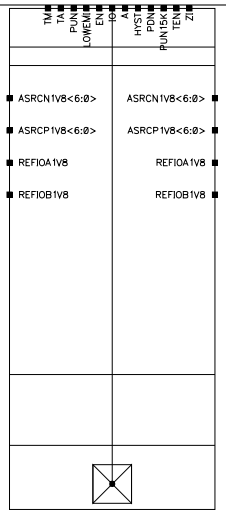
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
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HYST Input Cap.	0.0326	0.0319
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IO Max Load	51.391	51.336
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TM Input Cap.	0.0450	0.0442
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Special Pin Properties

Pin	Parameter	Value	
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IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
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LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
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R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

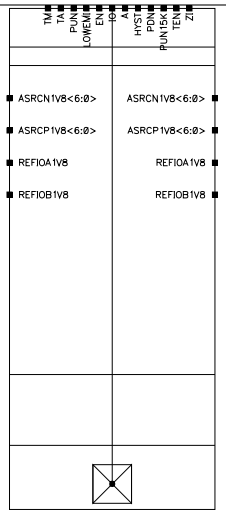
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

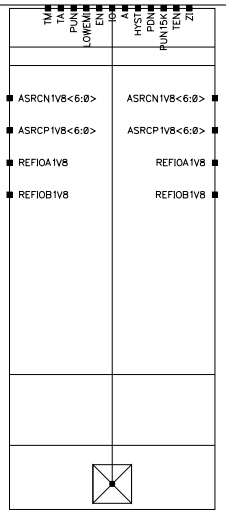
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

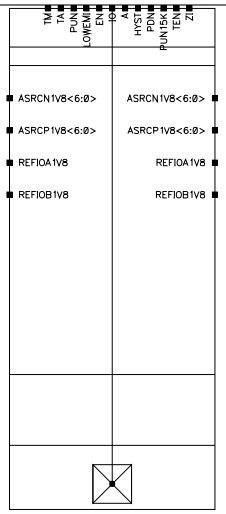
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

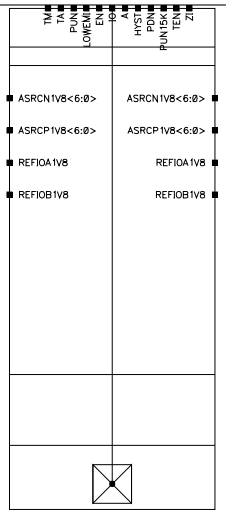
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
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HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
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ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

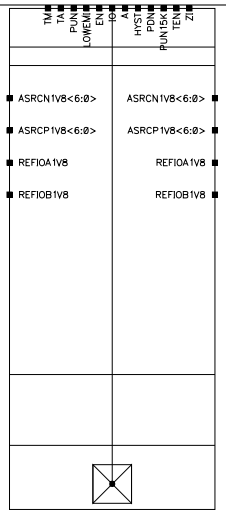
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

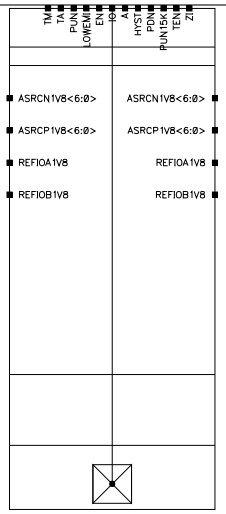
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

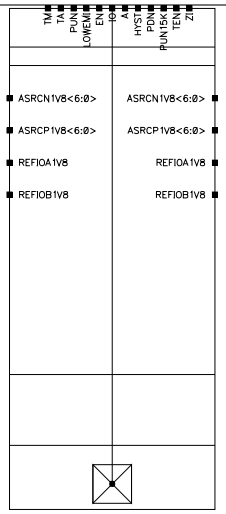
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
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R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
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ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
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Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
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F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

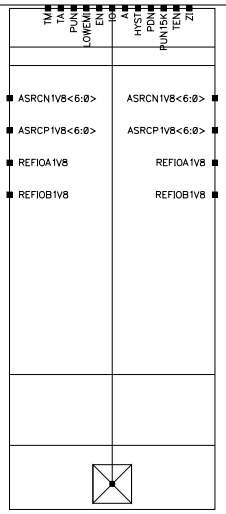
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

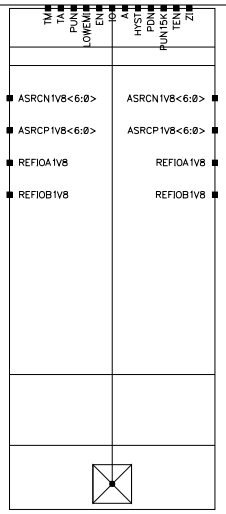
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

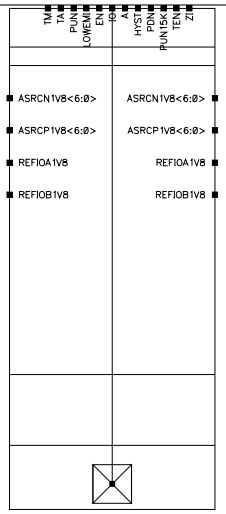
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0350
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0331	0.0322
HYST Input Cap.	0.0326	0.0319
IO Input Cap.	1.3908	1.3362
IO Max Load	51.391	51.336
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0190	0.0189
PUN Input Cap.	0.0261	0.0261
PUN15K Input Cap.	0.0252	0.0244
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0377	0.0348
TEN Input Cap.	0.0316	0.0307
TM Input Cap.	0.0450	0.0442
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.133 + 0.192*Tr + 0.131*C	1.200 + 0.388*Tr + 0.114*C
R-010	1.296 + 0.011*Tr + 0.110*C	1.284 + 0.247*Tr + 0.092*C
F-000	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.384*Tr + 0.111*C
R-000	1.057 + 0.009*Tr + 0.104*C	1.017 + 0.246*Tr + 0.089*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.527 + 0.140*Tr	0.570 + 0.376*Tr
LZ-10	0.521 + 0.140*Tr	0.578 + 0.375*Tr
HZ-00	0.526 + 0.141*Tr	0.569 + 0.376*Tr
LZ-00	0.521 + 0.140*Tr	0.578 + 0.376*Tr
ZH-10	1.310 + 0.170*Tr + 0.110*C	1.332 + 0.475*Tr + 0.093*C
ZL-10	1.162 + 0.165*Tr + 0.131*C	1.247 + 0.474*Tr + 0.114*C
ZH-00	1.065 + 0.170*Tr + 0.104*C	1.059 + 0.471*Tr + 0.090*C
ZL-00	0.743 + 0.164*Tr + 0.127*C	0.826 + 0.475*Tr + 0.111*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.179*C	0.469 + 0.250*Tr + 0.168*C
R-1	0.438 + 0.181*Tr + 0.114*C	0.457 + 0.263*Tr + 0.211*C
F-0	0.379 + 0.050*Tr + 0.177*C	0.436 + 0.062*Tr + 0.242*C
R-0	0.395 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.134 + 0.192*Tr + 0.131*C	1.201 + 0.390*Tr + 0.114*C
R-101	1.295 + 0.014*Tr + 0.110*C	1.282 + 0.250*Tr + 0.092*C
F-001	0.728 + 0.194*Tr + 0.127*C	0.794 + 0.388*Tr + 0.111*C
R-001	1.056 + 0.012*Tr + 0.104*C	1.015 + 0.247*Tr + 0.090*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.526 + 0.140*Tr	0.568 + 0.379*Tr
LZ-01	0.521 + 0.141*Tr	0.576 + 0.379*Tr
HZ-11	0.526 + 0.141*Tr	0.568 + 0.379*Tr
LZ-11	0.521 + 0.141*Tr	0.577 + 0.379*Tr
ZH-01	1.066 + 0.167*Tr + 0.104*C	1.059 + 0.476*Tr + 0.090*C
ZL-01	0.744 + 0.164*Tr + 0.127*C	0.828 + 0.474*Tr + 0.111*C
ZH-11	1.311 + 0.168*Tr + 0.110*C	1.333 + 0.471*Tr + 0.093*C
ZL-11	1.163 + 0.162*Tr + 0.131*C	1.248 + 0.473*Tr + 0.114*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.522 + 0.188*Tr	0.558 + 0.391*Tr
LZ-011	0.364 + 0.025*Tr	0.396 + 0.253*Tr
HZ-110	0.547 + 0.261*Tr	0.606 + 0.427*Tr

LZ-110	0.390 + 0.266*Tr	0.444 + 0.466*Tr
HZ-001	0.522 + 0.187*Tr	0.558 + 0.391*Tr
LZ-001	0.364 + 0.012*Tr	0.396 + 0.262*Tr
HZ-100	0.547 + 0.261*Tr	0.605 + 0.427*Tr
LZ-100	0.389 + 0.266*Tr	0.441 + 0.486*Tr
ZH-011	1.306 + 0.207*Tr + 0.110*C	1.318 + 0.483*Tr + 0.093*C
ZL-011	1.160 + 0.201*Tr + 0.131*C	1.233 + 0.480*Tr + 0.114*C
ZH-110	1.320 - 0.035*Tr + 0.110*C	1.347 + 0.219*Tr + 0.093*C
ZL-110	1.175 - 0.021*Tr + 0.131*C	1.265 + 0.239*Tr + 0.114*C
ZH-001	1.060 + 0.207*Tr + 0.104*C	1.046 + 0.480*Tr + 0.090*C
ZL-001	0.742 + 0.200*Tr + 0.127*C	0.814 + 0.478*Tr + 0.111*C
ZH-100	1.075 - 0.035*Tr + 0.104*C	1.075 + 0.216*Tr + 0.090*C
ZL-100	0.758 - 0.022*Tr + 0.127*C	0.845 + 0.236*Tr + 0.111*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.144 - 0.030*Tr + 0.131*C	1.209 + 0.227*Tr + 0.114*C
R-10100	1.317 + 0.260*Tr + 0.110*C	1.319 + 0.440*Tr + 0.092*C
F-00110	1.129 + 0.213*Tr + 0.131*C	1.188 + 0.368*Tr + 0.114*C
R-00110	1.294 + 0.025*Tr + 0.110*C	1.276 + 0.229*Tr + 0.092*C
F-10000	0.738 - 0.028*Tr + 0.127*C	0.802 + 0.226*Tr + 0.111*C
R-10000	1.078 + 0.260*Tr + 0.104*C	1.052 + 0.438*Tr + 0.090*C
F-00010	0.723 + 0.215*Tr + 0.127*C	0.781 + 0.364*Tr + 0.111*C
R-00010	1.054 + 0.024*Tr + 0.104*C	1.010 + 0.229*Tr + 0.089*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.166 + 0.105*C	0.130 + 0.091*C
R-010	0.269 + 0.087*C	0.175 + 0.002*Tr + 0.073*C
F-000	0.058 + 0.107*C	0.047 + 0.092*C
R-000	0.173 + 0.088*C	0.107 + 0.074*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-10	0.171 - 0.001*Tr + 0.105*C	0.133 + 0.090*C
ZH-00	0.174 + 0.088*C	0.108 + 0.074*C
ZL-00	0.059 - 0.001*Tr + 0.107*C	0.048 + 0.092*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.130*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.085*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-101	0.268 + 0.003*Tr + 0.087*C	0.175 + 0.073*C
F-001	0.058 + 0.107*C	0.047 + 0.092*C
R-001	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.174 + 0.088*C	0.108 + 0.002*Tr + 0.074*C
ZL-01	0.059 + 0.107*C	0.048 + 0.092*C
ZH-11	0.272 + 0.001*Tr + 0.087*C	0.178 - 0.002*Tr + 0.073*C
ZL-11	0.172 - 0.003*Tr + 0.105*C	0.133 + 0.090*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.272 + 0.087*C	0.177 + 0.073*C
ZL-011	0.171 - 0.002*Tr + 0.105*C	0.133 + 0.090*C
ZH-110	0.271 + 0.002*Tr + 0.087*C	0.177 + 0.073*C
ZL-110	0.170 + 0.105*C	0.133 + 0.090*C
ZH-001	0.174 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-001	0.059 + 0.107*C	0.048 + 0.092*C
ZH-100	0.175 + 0.001*Tr + 0.088*C	0.108 + 0.074*C
ZL-100	0.059 - 0.001*Tr + 0.107*C	0.047 + 0.001*Tr + 0.092*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.167 - 0.001*Tr + 0.105*C	0.130 + 0.091*C
R-10100	0.269 + 0.087*C	0.175 + 0.073*C
F-00110	0.167 - 0.002*Tr + 0.105*C	0.130 + 0.091*C
R-00110	0.269 + 0.087*C	0.175 + 0.073*C
F-10000	0.057 + 0.107*C	0.047 + 0.092*C
R-10000	0.172 + 0.002*Tr + 0.088*C	0.107 + 0.074*C
F-00010	0.058 + 0.107*C	0.047 + 0.092*C
R-00010	0.173 + 0.088*C	0.107 + 0.074*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	9.058e-03
worst 0.90 -40	6.622e-07	3.667e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.517 + 0.314*Tr	0.648 + 0.939*Tr	0.257 + 0.005*Tr	0.336 + 0.006*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149
For vdde1v8				
IO toggling/Output stable	8.245 + 0.045*Tr	9.573 + 0.065*Tr	5.318 + 0.017*Tr	6.107 - 0.012*Tr
ZI toggling	0.502 + 0.541*Tr	0.654 + 0.880*Tr	0.257 + 0.099*Tr	0.398 + 0.249*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.

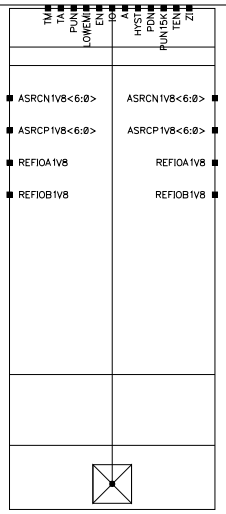
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

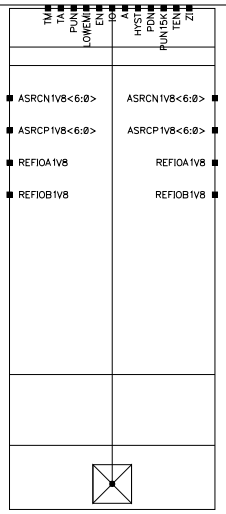
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

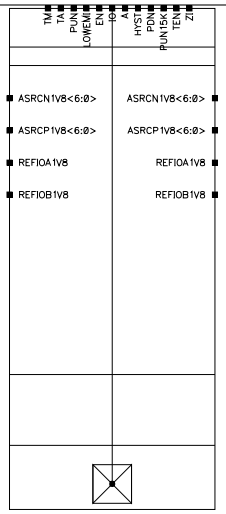
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

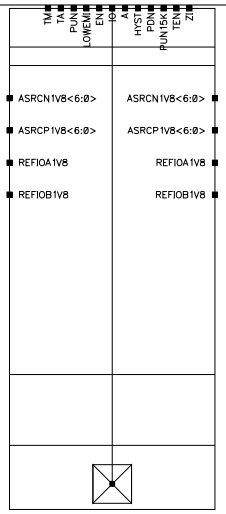
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

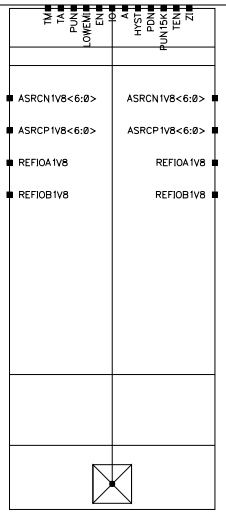
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

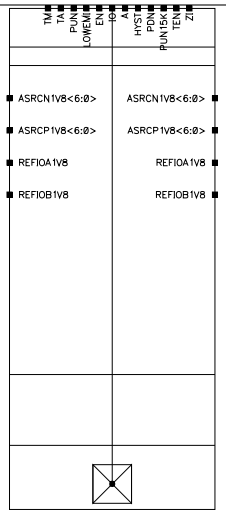
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

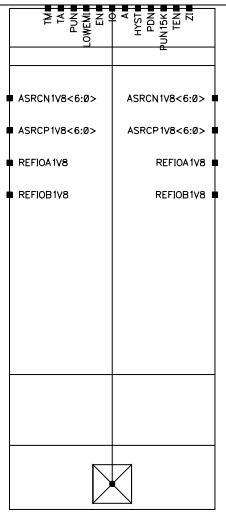
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

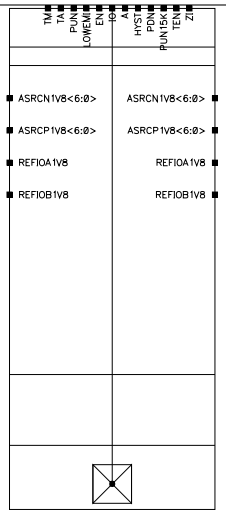
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

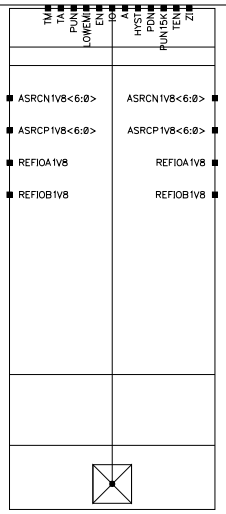
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

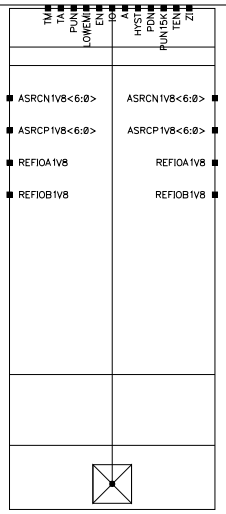
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

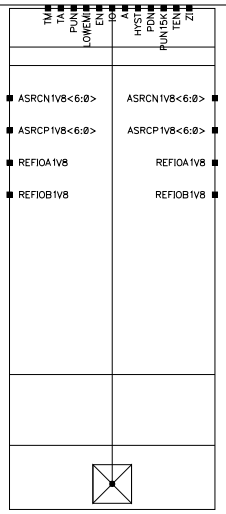
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

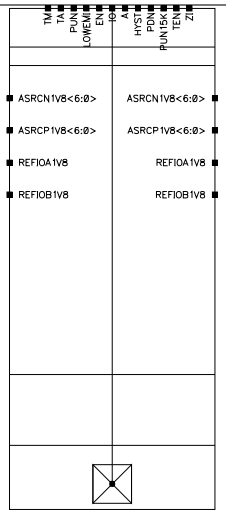
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

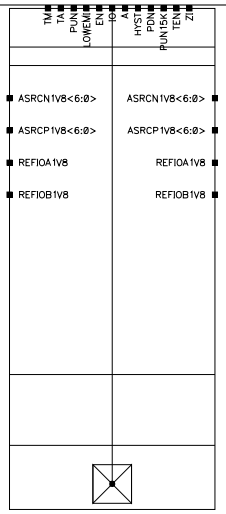
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

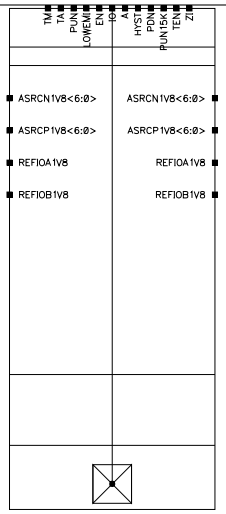
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

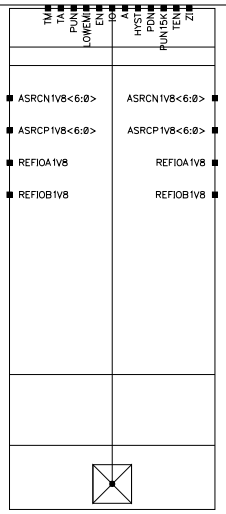
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

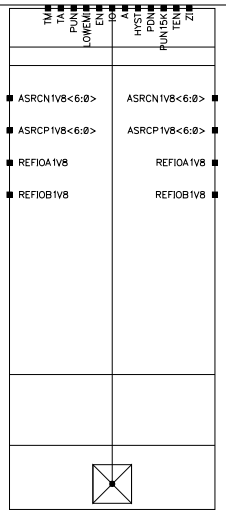
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0378	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.4576	1.4001
IO Max Load	101.458	101.400
LOWEMI Input Cap.	0.0263	0.0263
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0253	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.082 + 0.193*Tr + 0.067*C	1.148 + 0.386*Tr + 0.058*C
R-010	1.125 + 0.010*Tr + 0.053*C	1.115 + 0.245*Tr + 0.046*C
F-000	0.784 + 0.196*Tr + 0.065*C	0.842 + 0.387*Tr + 0.056*C
R-000	0.983 + 0.011*Tr + 0.052*C	0.961 + 0.246*Tr + 0.045*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.598 + 0.141*Tr	0.626 + 0.375*Tr
LZ-10	0.545 + 0.141*Tr	0.589 + 0.376*Tr
HZ-00	0.601 + 0.133*Tr	0.625 + 0.376*Tr
LZ-00	0.545 + 0.140*Tr	0.589 + 0.376*Tr
ZH-10	1.133 + 0.166*Tr + 0.053*C	1.155 + 0.474*Tr + 0.046*C
ZL-10	1.108 + 0.165*Tr + 0.067*C	1.189 + 0.476*Tr + 0.058*C
ZH-00	0.989 + 0.168*Tr + 0.052*C	0.999 + 0.477*Tr + 0.045*C
ZL-00	0.802 + 0.164*Tr + 0.065*C	0.877 + 0.475*Tr + 0.056*C
Path IO-ZI (for pins HYST)		
F-1	0.417 + 0.196*Tr + 0.186*C	0.466 + 0.250*Tr + 0.257*C
R-1	0.436 + 0.181*Tr + 0.127*C	0.463 + 0.264*Tr + 0.160*C
F-0	0.379 + 0.050*Tr + 0.176*C	0.436 + 0.062*Tr + 0.240*C
R-0	0.394 + 0.044*Tr + 0.124*C	0.451 + 0.063*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.082 + 0.195*Tr + 0.067*C	1.148 + 0.390*Tr + 0.058*C
R-101	1.125 + 0.009*Tr + 0.053*C	1.111 + 0.251*Tr + 0.046*C
F-001	0.785 + 0.196*Tr + 0.065*C	0.843 + 0.390*Tr + 0.056*C
R-001	0.983 + 0.010*Tr + 0.052*C	0.958 + 0.250*Tr + 0.045*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.599 + 0.138*Tr	0.624 + 0.378*Tr
LZ-01	0.544 + 0.141*Tr	0.588 + 0.379*Tr
HZ-11	0.598 + 0.141*Tr	0.624 + 0.377*Tr
LZ-11	0.545 + 0.141*Tr	0.588 + 0.379*Tr
ZH-01	0.990 + 0.168*Tr + 0.052*C	1.001 + 0.477*Tr + 0.045*C
ZL-01	0.803 + 0.164*Tr + 0.065*C	0.879 + 0.473*Tr + 0.056*C
ZH-11	1.134 + 0.168*Tr + 0.053*C	1.155 + 0.475*Tr + 0.046*C
ZL-11	1.108 + 0.166*Tr + 0.067*C	1.190 + 0.476*Tr + 0.058*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.593 + 0.188*Tr	0.613 + 0.391*Tr
LZ-011	0.388 + 0.015*Tr	0.407 + 0.247*Tr
HZ-110	0.618 + 0.260*Tr	0.661 + 0.424*Tr

LZ-110	0.413 + 0.267*Tr	0.450 + 0.464*Tr
HZ-001	0.594 + 0.188*Tr	0.614 + 0.389*Tr
LZ-001	0.387 + 0.003*Tr	0.406 + 0.254*Tr
HZ-100	0.617 + 0.258*Tr	0.661 + 0.425*Tr
LZ-100	0.413 + 0.267*Tr	0.448 + 0.474*Tr
ZH-011	1.129 + 0.205*Tr + 0.053*C	1.142 + 0.483*Tr + 0.046*C
ZL-011	1.106 + 0.201*Tr + 0.067*C	1.177 + 0.479*Tr + 0.058*C
ZH-110	1.143 - 0.035*Tr + 0.053*C	1.169 + 0.222*Tr + 0.046*C
ZL-110	1.121 - 0.019*Tr + 0.067*C	1.209 + 0.240*Tr + 0.058*C
ZH-001	0.984 + 0.206*Tr + 0.052*C	0.986 + 0.482*Tr + 0.045*C
ZL-001	0.799 + 0.200*Tr + 0.065*C	0.865 + 0.479*Tr + 0.056*C
ZH-100	0.999 - 0.035*Tr + 0.052*C	1.015 + 0.218*Tr + 0.045*C
ZL-100	0.815 - 0.021*Tr + 0.065*C	0.897 + 0.236*Tr + 0.056*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.093 - 0.030*Tr + 0.067*C	1.157 + 0.225*Tr + 0.058*C
R-10100	1.146 + 0.259*Tr + 0.053*C	1.148 + 0.440*Tr + 0.046*C
F-00110	1.076 + 0.216*Tr + 0.067*C	1.135 + 0.367*Tr + 0.058*C
R-00110	1.123 + 0.023*Tr + 0.053*C	1.106 + 0.230*Tr + 0.046*C
F-10000	0.795 - 0.027*Tr + 0.065*C	0.850 + 0.229*Tr + 0.056*C
R-10000	1.004 + 0.259*Tr + 0.052*C	0.995 + 0.441*Tr + 0.045*C
F-00010	0.780 + 0.216*Tr + 0.065*C	0.828 + 0.367*Tr + 0.056*C
R-00010	0.980 + 0.025*Tr + 0.052*C	0.954 + 0.228*Tr + 0.045*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.161 - 0.003*Tr + 0.053*C	0.124 + 0.045*C
R-010	0.173 + 0.044*C	0.121 + 0.037*C
F-000	0.085 + 0.053*C	0.066 + 0.001*Tr + 0.046*C
R-000	0.140 + 0.004*Tr + 0.044*C	0.095 + 0.002*Tr + 0.037*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.176 - 0.003*Tr + 0.044*C	0.123 - 0.003*Tr + 0.037*C
ZL-10	0.165 - 0.002*Tr + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-00	0.142 + 0.044*C	0.097 + 0.002*Tr + 0.037*C
ZL-00	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.188*C
R-1	0.006 + 0.085*C	0.009 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.160 + 0.053*C	0.124 + 0.045*C
R-101	0.174 - 0.003*Tr + 0.044*C	0.120 + 0.037*C
F-001	0.085 + 0.053*C	0.067 + 0.046*C
R-001	0.140 + 0.001*Tr + 0.044*C	0.095 + 0.001*Tr + 0.037*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.143 + 0.001*Tr + 0.044*C	0.097 + 0.037*C
ZL-01	0.088 - 0.002*Tr + 0.053*C	0.068 + 0.046*C
ZH-11	0.176 - 0.002*Tr + 0.044*C	0.122 + 0.037*C
ZL-11	0.165 - 0.002*Tr + 0.053*C	0.128 + 0.001*Tr + 0.045*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.176 + 0.044*C	0.123 + 0.037*C
ZL-011	0.166 - 0.002*Tr + 0.053*C	0.128 - 0.001*Tr + 0.045*C
ZH-110	0.176 - 0.003*Tr + 0.044*C	0.123 + 0.037*C
ZL-110	0.164 + 0.053*C	0.128 - 0.002*Tr + 0.045*C
ZH-001	0.142 + 0.004*Tr + 0.044*C	0.097 + 0.037*C
ZL-001	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
ZH-100	0.143 - 0.003*Tr + 0.044*C	0.097 + 0.037*C
ZL-100	0.088 - 0.002*Tr + 0.053*C	0.069 + 0.046*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.161 - 0.002*Tr + 0.053*C	0.125 + 0.045*C
R-10100	0.172 + 0.044*C	0.121 + 0.037*C
F-00110	0.160 + 0.053*C	0.124 + 0.045*C
R-00110	0.173 + 0.044*C	0.121 + 0.037*C
F-10000	0.085 + 0.001*Tr + 0.053*C	0.066 + 0.046*C
R-10000	0.140 + 0.002*Tr + 0.044*C	0.095 + 0.037*C
F-00010	0.085 - 0.003*Tr + 0.053*C	0.067 + 0.046*C
R-00010	0.141 + 0.044*C	0.095 + 0.037*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.094e-02
worst 0.90 -40	6.622e-07	3.711e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.515 + 0.314*Tr	0.646 + 0.941*Tr	0.258	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.149 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	8.825 - 0.031*Tr	10.224 - 0.023*Tr	5.769 + 0.009*Tr	6.620 - 0.002*Tr
ZI toggling	0.507 + 0.549*Tr	0.654 + 0.890*Tr	0.258 + 0.098*Tr	0.398 + 0.252*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.

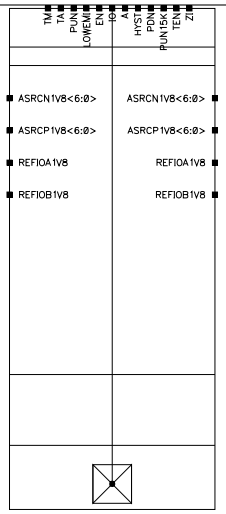
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

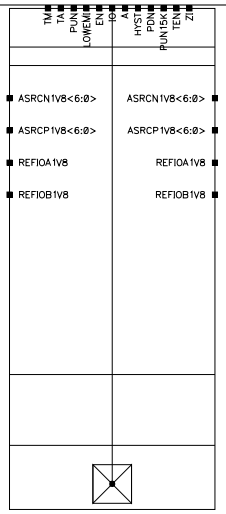
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

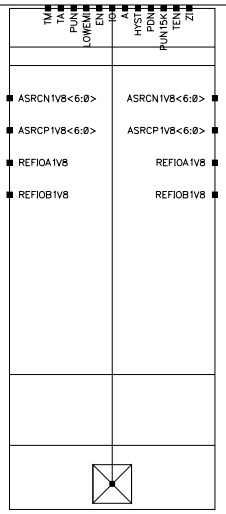
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

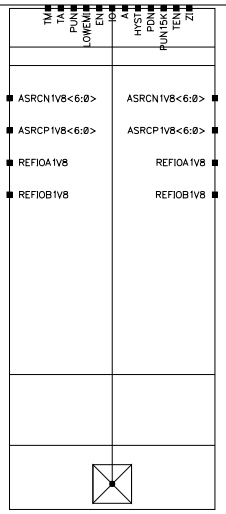
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

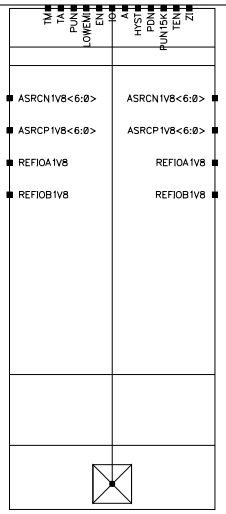
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

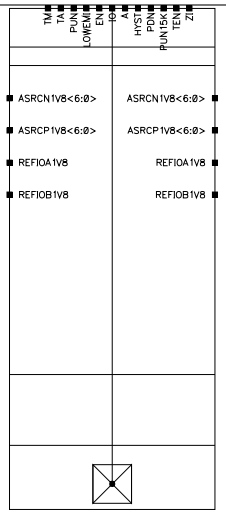
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

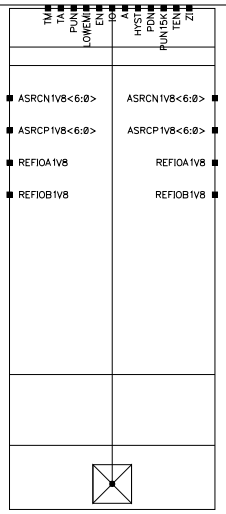
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

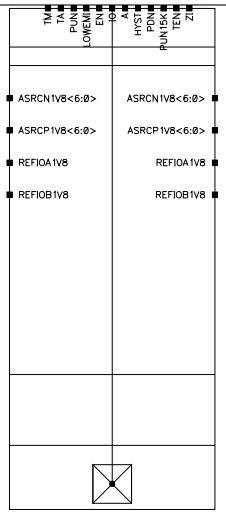
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

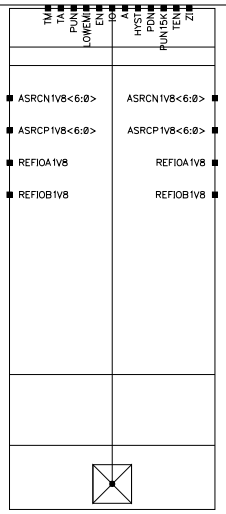
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

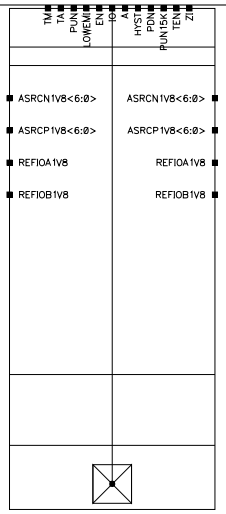
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

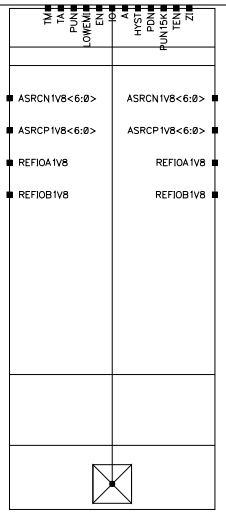
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

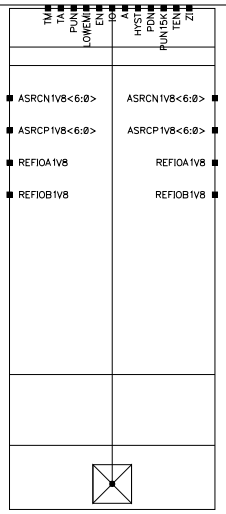
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0377	0.0349
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0329	0.0320
HYST Input Cap.	0.0325	0.0318
IO Input Cap.	1.5072	1.4476
IO Max Load	201.507	201.448
LOWEMI Input Cap.	0.0265	0.0265
PDN Input Cap.	0.0189	0.0189
PUN Input Cap.	0.0260	0.0260
PUN15K Input Cap.	0.0252	0.0245
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0381	0.0352
TEN Input Cap.	0.0315	0.0306
TM Input Cap.	0.0448	0.0440
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.216 + 0.197*Tr + 0.046*C	1.292 + 0.391*Tr + 0.040*C
R-010	1.230 + 0.011*Tr + 0.038*C	1.198 + 0.244*Tr + 0.033*C
F-000	0.866 + 0.197*Tr + 0.045*C	0.926 + 0.384*Tr + 0.039*C
R-000	0.939 + 0.007*Tr + 0.037*C	0.906 + 0.247*Tr + 0.033*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.640 + 0.139*Tr	0.654 + 0.379*Tr
LZ-10	0.563 + 0.138*Tr	0.602 + 0.375*Tr
HZ-00	0.641 + 0.137*Tr	0.655 + 0.378*Tr
LZ-00	0.563 + 0.137*Tr	0.602 + 0.375*Tr
ZH-10	1.238 + 0.167*Tr + 0.038*C	1.238 + 0.472*Tr + 0.033*C
ZL-10	1.243 + 0.165*Tr + 0.046*C	1.336 + 0.476*Tr + 0.040*C
ZH-00	0.943 + 0.168*Tr + 0.037*C	0.943 + 0.476*Tr + 0.033*C
ZL-00	0.883 + 0.165*Tr + 0.045*C	0.962 + 0.475*Tr + 0.039*C
Path IO-ZI (for pins HYST)		
F-1	0.418 + 0.197*Tr + 0.175*C	0.467 + 0.250*Tr + 0.255*C
R-1	0.438 + 0.180*Tr + 0.156*C	0.463 + 0.263*Tr + 0.168*C
F-0	0.380 + 0.051*Tr + 0.177*C	0.437 + 0.062*Tr + 0.239*C
R-0	0.397 + 0.044*Tr + 0.124*C	0.451 + 0.064*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.216 + 0.195*Tr + 0.046*C	1.294 + 0.391*Tr + 0.040*C
R-101	1.229 + 0.014*Tr + 0.038*C	1.196 + 0.247*Tr + 0.033*C
F-001	0.865 + 0.198*Tr + 0.045*C	0.926 + 0.388*Tr + 0.039*C
R-001	0.937 + 0.013*Tr + 0.037*C	0.904 + 0.252*Tr + 0.033*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.640 + 0.140*Tr	0.653 + 0.382*Tr
LZ-01	0.562 + 0.140*Tr	0.600 + 0.378*Tr
HZ-11	0.639 + 0.143*Tr	0.653 + 0.379*Tr
LZ-11	0.562 + 0.140*Tr	0.601 + 0.378*Tr
ZH-01	0.943 + 0.171*Tr + 0.037*C	0.944 + 0.475*Tr + 0.033*C
ZL-01	0.884 + 0.163*Tr + 0.045*C	0.963 + 0.472*Tr + 0.039*C
ZH-11	1.238 + 0.170*Tr + 0.038*C	1.237 + 0.474*Tr + 0.033*C
ZL-11	1.244 + 0.166*Tr + 0.046*C	1.337 + 0.478*Tr + 0.040*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.636 + 0.188*Tr	0.643 + 0.390*Tr
LZ-011	0.406 + 0.011*Tr	0.420 + 0.241*Tr
HZ-110	0.662 + 0.252*Tr	0.690 + 0.424*Tr

LZ-110	0.431 + 0.267*Tr	0.459 + 0.461*Tr
HZ-001	0.636 + 0.187*Tr	0.644 + 0.388*Tr
LZ-001	0.404 - 0.009*Tr	0.419 + 0.243*Tr
HZ-100	0.661 + 0.254*Tr	0.691 + 0.419*Tr
LZ-100	0.430 + 0.267*Tr	0.457 + 0.462*Tr
ZH-011	1.234 + 0.204*Tr + 0.038*C	1.225 + 0.479*Tr + 0.033*C
ZL-011	1.239 + 0.206*Tr + 0.046*C	1.324 + 0.482*Tr + 0.040*C
ZH-110	1.246 - 0.029*Tr + 0.038*C	1.252 + 0.218*Tr + 0.033*C
ZL-110	1.257 - 0.025*Tr + 0.046*C	1.355 + 0.242*Tr + 0.040*C
ZH-001	0.939 + 0.203*Tr + 0.037*C	0.929 + 0.486*Tr + 0.033*C
ZL-001	0.880 + 0.201*Tr + 0.045*C	0.949 + 0.479*Tr + 0.039*C
ZH-100	0.953 - 0.036*Tr + 0.037*C	0.960 + 0.214*Tr + 0.033*C
ZL-100	0.897 - 0.022*Tr + 0.045*C	0.981 + 0.236*Tr + 0.039*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.228 - 0.033*Tr + 0.046*C	1.302 + 0.230*Tr + 0.040*C
R-10100	1.252 + 0.261*Tr + 0.038*C	1.233 + 0.438*Tr + 0.033*C
F-00110	1.210 + 0.219*Tr + 0.046*C	1.281 + 0.367*Tr + 0.040*C
R-00110	1.228 + 0.021*Tr + 0.038*C	1.190 + 0.229*Tr + 0.033*C
F-10000	0.876 - 0.026*Tr + 0.045*C	0.932 + 0.233*Tr + 0.039*C
R-10000	0.960 + 0.255*Tr + 0.037*C	0.941 + 0.440*Tr + 0.033*C
F-00010	0.860 + 0.220*Tr + 0.045*C	0.912 + 0.367*Tr + 0.039*C
R-00010	0.936 + 0.022*Tr + 0.037*C	0.899 + 0.230*Tr + 0.033*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.188 - 0.007*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-010	0.199 + 0.002*Tr + 0.032*C	0.138 + 0.027*C
F-000	0.100 - 0.001*Tr + 0.037*C	0.081 + 0.032*C
R-000	0.124 + 0.032*C	0.083 + 0.002*Tr + 0.027*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.200 + 0.005*Tr + 0.032*C	0.141 - 0.001*Tr + 0.027*C
ZL-10	0.192 + 0.037*C	0.153 + 0.002*Tr + 0.032*C
ZH-00	0.126 + 0.002*Tr + 0.032*C	0.084 + 0.027*C
ZL-00	0.104 - 0.002*Tr + 0.037*C	0.083 + 0.032*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.137*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.128*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.084*C	0.008 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.187 - 0.004*Tr + 0.037*C	0.149 + 0.002*Tr + 0.032*C
R-101	0.197 + 0.007*Tr + 0.032*C	0.139 + 0.027*C
F-001	0.098 + 0.004*Tr + 0.037*C	0.081 + 0.032*C
R-001	0.125 + 0.032*C	0.083 + 0.001*Tr + 0.027*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.124 + 0.007*Tr + 0.032*C	0.085 + 0.027*C
ZL-01	0.104 - 0.001*Tr + 0.037*C	0.082 + 0.032*C
ZH-11	0.201 + 0.032*C	0.140 + 0.027*C
ZL-11	0.193 - 0.006*Tr + 0.037*C	0.153 + 0.002*Tr + 0.032*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.200 + 0.007*Tr + 0.032*C	0.141 + 0.027*C
ZL-011	0.192 + 0.037*C	0.153 + 0.001*Tr + 0.032*C
ZH-110	0.200 + 0.008*Tr + 0.032*C	0.140 + 0.027*C
ZL-110	0.192 - 0.002*Tr + 0.037*C	0.153 + 0.004*Tr + 0.032*C
ZH-001	0.127 + 0.032*C	0.084 + 0.002*Tr + 0.027*C
ZL-001	0.103 + 0.037*C	0.083 - 0.001*Tr + 0.032*C
ZH-100	0.126 - 0.002*Tr + 0.032*C	0.085 - 0.003*Tr + 0.027*C
ZL-100	0.103 + 0.037*C	0.083 + 0.002*Tr + 0.032*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.188 - 0.002*Tr + 0.037*C	0.149 + 0.032*C
R-10100	0.198 + 0.009*Tr + 0.032*C	0.139 + 0.027*C
F-00110	0.187 + 0.037*C	0.150 + 0.032*C
R-00110	0.198 + 0.004*Tr + 0.032*C	0.138 + 0.001*Tr + 0.027*C
F-10000	0.099 + 0.005*Tr + 0.037*C	0.080 + 0.002*Tr + 0.032*C
R-10000	0.126 - 0.006*Tr + 0.032*C	0.083 + 0.027*C
F-00010	0.100 + 0.037*C	0.080 + 0.003*Tr + 0.032*C
R-00010	0.125 + 0.002*Tr + 0.032*C	0.083 + 0.027*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.218e-02
worst 0.90 -40	6.623e-07	3.727e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.514 + 0.313*Tr	0.646 + 0.941*Tr	0.256 + 0.005*Tr	0.335 + 0.008*Tr
ZI toggling	0.285 + 0.002*Tr	0.289 + 0.010*Tr	0.147	0.148 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.315 + 0.005*Tr	10.800 + 0.030*Tr	6.112 + 0.019*Tr	7.004 - 0.015*Tr
ZI toggling	0.503 + 0.555*Tr	0.658 + 0.894*Tr	0.259 + 0.098*Tr	0.400 + 0.251*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.

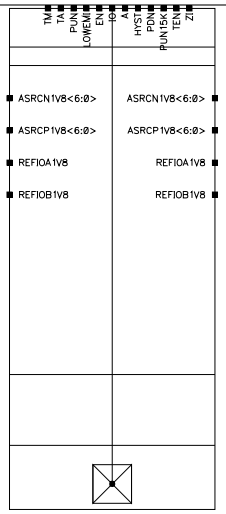
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

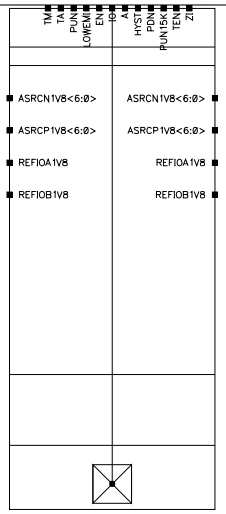
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

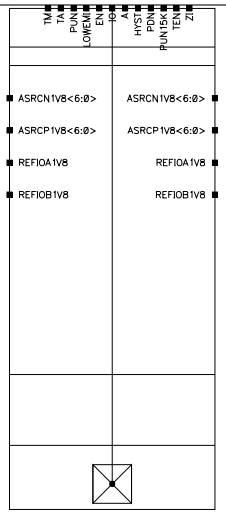
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

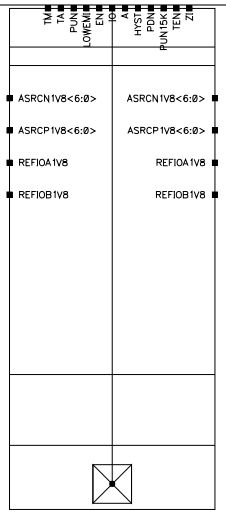
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

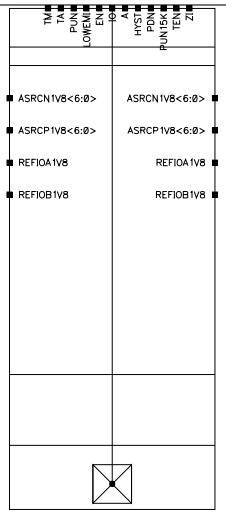
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

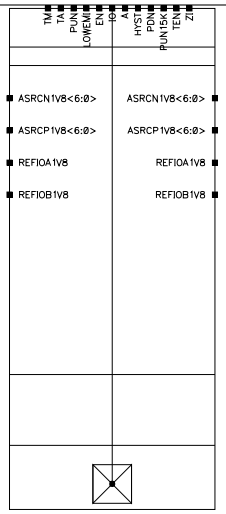
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

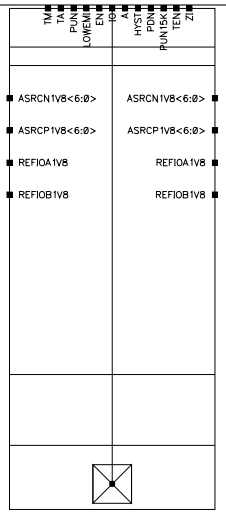
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

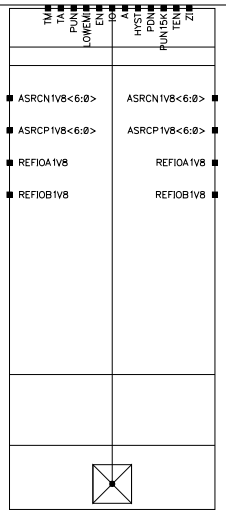
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

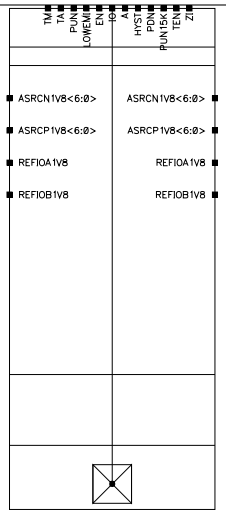
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

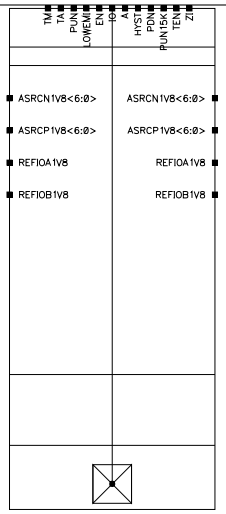
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

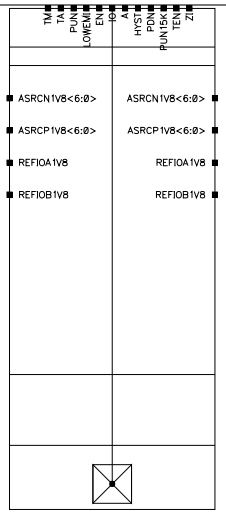
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*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.

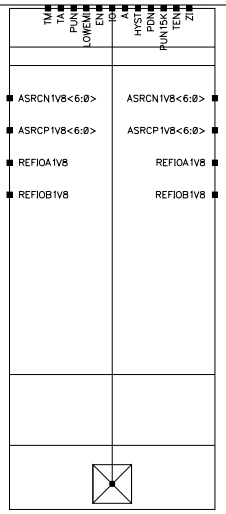
Physical Dimensions

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 1.10 125	**worst 0.90 -40**

A Input Cap.	0.0261	0.0233
ASRCN1V8[0] Input Cap.	0.0100	0.0100
ASRCN1V8[0] Max Load	10000.000	10000.000
ASRCN1V8[1] Input Cap.	0.0100	0.0100
ASRCN1V8[1] Max Load	10000.000	10000.000
ASRCN1V8[2] Input Cap.	0.0100	0.0100
ASRCN1V8[2] Max Load	10000.000	10000.000
ASRCN1V8[3] Input Cap.	0.0100	0.0100
ASRCN1V8[3] Max Load	10000.000	10000.000
ASRCN1V8[4] Input Cap.	0.0100	0.0100
ASRCN1V8[4] Max Load	10000.000	10000.000
ASRCN1V8[5] Input Cap.	0.0100	0.0100
ASRCN1V8[5] Max Load	10000.000	10000.000
ASRCN1V8[6] Input Cap.	0.0100	0.0100
ASRCN1V8[6] Max Load	10000.000	10000.000
ASRCP1V8[0] Input Cap.	0.0100	0.0100
ASRCP1V8[0] Max Load	10000.000	10000.000
ASRCP1V8[1] Input Cap.	0.0100	0.0100
ASRCP1V8[1] Max Load	10000.000	10000.000
ASRCP1V8[2] Input Cap.	0.0100	0.0100
ASRCP1V8[2] Max Load	10000.000	10000.000
ASRCP1V8[3] Input Cap.	0.0100	0.0100
ASRCP1V8[3] Max Load	10000.000	10000.000
ASRCP1V8[4] Input Cap.	0.0100	0.0100
ASRCP1V8[4] Max Load	10000.000	10000.000
ASRCP1V8[5] Input Cap.	0.0100	0.0100
ASRCP1V8[5] Max Load	10000.000	10000.000
ASRCP1V8[6] Input Cap.	0.0100	0.0100
ASRCP1V8[6] Max Load	10000.000	10000.000
EN Input Cap.	0.0197	0.0188
HYST Input Cap.	0.0146	0.0139
IO Input Cap.	1.5787	1.5170
IO Max Load	201.579	201.517
LOWEMI Input Cap.	0.0107	0.0107
PDN Input Cap.	0.0057	0.0057
PUN Input Cap.	0.0114	0.0114
PUN15K Input Cap.	0.0101	0.0094
REFIOA1V8 Input Cap.	0.0100	0.0100
REFIOA1V8 Max Load	10000.000	10000.000
REFIOB1V8 Input Cap.	0.0100	0.0100
REFIOB1V8 Max Load	10000.000	10000.000
TA Input Cap.	0.0272	0.0243
TEN Input Cap.	0.0185	0.0176
TM Input Cap.	0.0332	0.0324
ZI Max Load	0.200	0.200

Special Pin Properties

Pin	Parameter	Value	
		best 1.10	**worst 0.90**
IO (Input)	Min Transition (ns)	0.375	0.375
IO (Input)	Max Transition (ns)	12.0	12.0
IO (Input)	Swing (V)	0.0 - 1.95	0.0 - 1.65

IO (Input)	Delay thres. rising (V)	0.975	0.825
IO (Input)	Delay thres. falling (V)	0.975	0.825
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 - 1.95	0.0 - 1.65
IO (Output)	Delay thres. rising (V)	0.975	0.825
IO (Output)	Delay thres. falling (V)	0.975	0.825
IO (Output)	Slope thres. low (V)	0.585	0.495
IO (Output)	Slope thres. high (V)	1.365	1.155

Propagation Delay

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	1.110 + 0.193*Tr + 0.035*C	1.190 + 0.388*Tr + 0.031*C
R-010	1.272 + 0.011*Tr + 0.030*C	1.237 + 0.246*Tr + 0.026*C
F-000	0.796 + 0.195*Tr + 0.034*C	0.861 + 0.387*Tr + 0.030*C
R-000	0.891 + 0.010*Tr + 0.028*C	0.875 + 0.246*Tr + 0.025*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.689 + 0.144*Tr	0.699 + 0.378*Tr
LZ-10	0.585 + 0.139*Tr	0.618 + 0.376*Tr
HZ-00	0.695 + 0.140*Tr	0.699 + 0.379*Tr
LZ-00	0.584 + 0.140*Tr	0.618 + 0.375*Tr
ZH-10	1.277 + 0.168*Tr + 0.030*C	1.272 + 0.478*Tr + 0.026*C
ZL-10	1.129 + 0.162*Tr + 0.035*C	1.227 + 0.475*Tr + 0.031*C
ZH-00	0.892 + 0.168*Tr + 0.028*C	0.907 + 0.477*Tr + 0.025*C
ZL-00	0.804 + 0.164*Tr + 0.034*C	0.892 + 0.474*Tr + 0.030*C
Path IO-ZI (for pins HYST)		
F-1	0.416 + 0.195*Tr + 0.178*C	0.466 + 0.249*Tr + 0.239*C
R-1	0.438 + 0.180*Tr + 0.116*C	0.457 + 0.263*Tr + 0.178*C
F-0	0.375 + 0.050*Tr + 0.182*C	0.431 + 0.062*Tr + 0.247*C
R-0	0.392 + 0.043*Tr + 0.131*C	0.446 + 0.064*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.109 + 0.193*Tr + 0.035*C	1.190 + 0.390*Tr + 0.031*C
R-101	1.271 + 0.012*Tr + 0.030*C	1.235 + 0.251*Tr + 0.026*C
F-001	0.796 + 0.196*Tr + 0.034*C	0.862 + 0.391*Tr + 0.030*C
R-001	0.890 + 0.011*Tr + 0.028*C	0.872 + 0.249*Tr + 0.025*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.693 + 0.141*Tr	0.698 + 0.380*Tr
LZ-01	0.584 + 0.140*Tr	0.617 + 0.377*Tr
HZ-11	0.693 + 0.137*Tr	0.699 + 0.380*Tr
LZ-11	0.585 + 0.140*Tr	0.617 + 0.377*Tr
ZH-01	0.893 + 0.165*Tr + 0.028*C	0.908 + 0.477*Tr + 0.025*C
ZL-01	0.805 + 0.164*Tr + 0.034*C	0.893 + 0.471*Tr + 0.030*C
ZH-11	1.278 + 0.166*Tr + 0.030*C	1.274 + 0.474*Tr + 0.026*C
ZL-11	1.128 + 0.165*Tr + 0.035*C	1.228 + 0.475*Tr + 0.031*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.688 + 0.192*Tr	0.689 + 0.390*Tr
LZ-011	0.427 + 0.011*Tr	0.439 + 0.240*Tr
HZ-110	0.716 + 0.251*Tr	0.736 + 0.425*Tr

LZ-110	0.453 + 0.268*Tr	0.480 + 0.445*Tr
HZ-001	0.690 + 0.186*Tr	0.688 + 0.390*Tr
LZ-001	0.426 - 0.021*Tr	0.438 + 0.234*Tr
HZ-100	0.716 + 0.256*Tr	0.735 + 0.425*Tr
LZ-100	0.453 + 0.268*Tr	0.480 + 0.440*Tr
ZH-011	1.273 + 0.205*Tr + 0.030*C	1.261 + 0.479*Tr + 0.026*C
ZL-011	1.127 + 0.199*Tr + 0.035*C	1.216 + 0.478*Tr + 0.031*C
ZH-110	1.288 - 0.035*Tr + 0.030*C	1.289 + 0.216*Tr + 0.026*C
ZL-110	1.142 - 0.024*Tr + 0.035*C	1.246 + 0.241*Tr + 0.031*C
ZH-001	0.887 + 0.204*Tr + 0.028*C	0.895 + 0.482*Tr + 0.025*C
ZL-001	0.800 + 0.201*Tr + 0.034*C	0.879 + 0.479*Tr + 0.030*C
ZH-100	0.902 - 0.038*Tr + 0.028*C	0.922 + 0.219*Tr + 0.025*C
ZL-100	0.817 - 0.023*Tr + 0.034*C	0.911 + 0.236*Tr + 0.030*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.120 - 0.030*Tr + 0.035*C	1.198 + 0.230*Tr + 0.031*C
R-10100	1.294 + 0.259*Tr + 0.030*C	1.271 + 0.441*Tr + 0.026*C
F-00110	1.104 + 0.216*Tr + 0.035*C	1.177 + 0.366*Tr + 0.031*C
R-00110	1.269 + 0.025*Tr + 0.030*C	1.229 + 0.230*Tr + 0.026*C
F-10000	0.806 - 0.027*Tr + 0.034*C	0.869 + 0.229*Tr + 0.030*C
R-10000	0.912 + 0.256*Tr + 0.028*C	0.908 + 0.440*Tr + 0.025*C
F-00010	0.790 + 0.217*Tr + 0.034*C	0.848 + 0.366*Tr + 0.030*C
R-00010	0.888 + 0.023*Tr + 0.028*C	0.866 + 0.232*Tr + 0.025*C

Transition Time

Event	Value (as a function of C in pF and Tr in nS)	
	best 1.10 125	**worst 0.90 -40**
Path A-IO (for pins EN LOWEMI TM)		
F-010	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.002*Tr + 0.024*C
R-010	0.225 + 0.024*C	0.159 + 0.020*C
F-000	0.095 + 0.028*C	0.079 + 0.024*C
R-000	0.121 + 0.004*Tr + 0.024*C	0.084 + 0.021*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.000	0.000
LZ-10	0.000	0.000
HZ-00	0.000	0.000
LZ-00	0.000	0.000
ZH-10	0.228 + 0.024*C	0.162 + 0.020*C
ZL-10	0.187 + 0.027*C	0.150 + 0.024*C
ZH-00	0.122 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-00	0.099 + 0.028*C	0.081 + 0.024*C
Path IO-ZI (for pins HYST)		
F-1	0.005 + 0.137*C	0.006 + 0.188*C
R-1	0.005 + 0.085*C	0.006 + 0.130*C
F-0	0.005 + 0.136*C	0.006 + 0.189*C
R-0	0.005 + 0.085*C	0.006 + 0.131*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.181 + 0.027*C	0.147 + 0.024*C
R-101	0.225 + 0.024*C	0.159 + 0.020*C
F-001	0.094 - 0.001*Tr + 0.028*C	0.079 + 0.024*C
R-001	0.121 + 0.024*C	0.084 - 0.001*Tr + 0.021*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.000	0.000

LZ-01	0.000	0.000
HZ-11	0.000	0.000
LZ-11	0.000	0.000
ZH-01	0.123 + 0.024*C	0.085 + 0.002*Tr + 0.021*C
ZL-01	0.099 + 0.028*C	0.081 - 0.002*Tr + 0.024*C
ZH-11	0.229 - 0.001*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-11	0.187 + 0.027*C	0.150 + 0.024*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.000	0.000
LZ-011	0.000	0.000
HZ-110	0.000	0.000
LZ-110	0.000	0.000
HZ-001	0.000	0.000
LZ-001	0.000	0.000
HZ-100	0.000	0.000
LZ-100	0.000	0.000
ZH-011	0.229 - 0.003*Tr + 0.024*C	0.163 - 0.002*Tr + 0.020*C
ZL-011	0.187 + 0.027*C	0.151 + 0.024*C
ZH-110	0.229 + 0.024*C	0.163 - 0.004*Tr + 0.020*C
ZL-110	0.187 + 0.027*C	0.151 - 0.002*Tr + 0.024*C
ZH-001	0.122 + 0.002*Tr + 0.024*C	0.086 + 0.021*C
ZL-001	0.099 + 0.028*C	0.081 + 0.024*C
ZH-100	0.123 + 0.024*C	0.086 + 0.021*C
ZL-100	0.099 + 0.028*C	0.081 + 0.024*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.181 + 0.027*C	0.146 + 0.024*C
R-10100	0.225 + 0.024*C	0.159 + 0.020*C
F-00110	0.182 - 0.001*Tr + 0.027*C	0.146 + 0.024*C
R-00110	0.226 - 0.002*Tr + 0.024*C	0.159 + 0.020*C
F-10000	0.095 - 0.002*Tr + 0.028*C	0.079 + 0.024*C
R-10000	0.121 + 0.024*C	0.084 + 0.021*C
F-00010	0.094 + 0.028*C	0.079 + 0.024*C
R-00010	0.121 + 0.024*C	0.084 + 0.021*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	1.383e-02
worst 0.90 -40	6.624e-07	3.739e-06

Internal Energy (at minimum output load)

Pin Cycle	Internal Energy (uW/MHz)			
	best 1.10 125 (Min values)	**best 1.10 125 (Max values)**	**worst 0.90 -40 (Min values)**	**worst 0.90 -40 (Max values)**
For vdd				
IO toggling/Output stable	0.496 + 0.312*Tr	0.624 + 0.939*Tr	0.243 + 0.001*Tr	0.319 + 0.008*Tr
ZI toggling	0.265 + 0.002*Tr	0.270 + 0.010*Tr	0.132	0.134 + 0.001*Tr
For vdde1v8				
IO toggling/Output stable	9.935 + 0.007*Tr	11.695 + 0.018*Tr	6.519 + 0.046*Tr	7.474 - 0.002*Tr
ZI toggling	0.505 + 0.561*Tr	0.666 + 0.896*Tr	0.258 + 0.098*Tr	0.396 + 0.252*Tr

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