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.

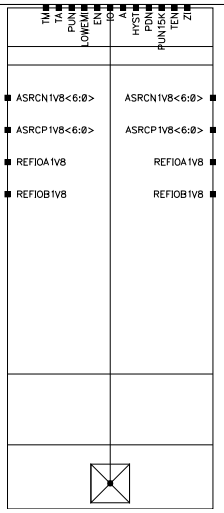
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35
IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		

F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr
LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

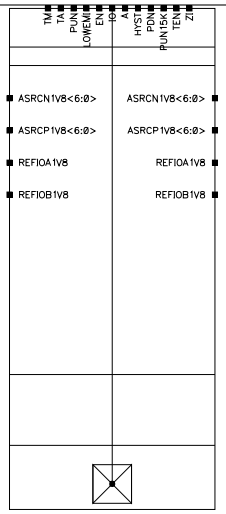
Physical Dimensions

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
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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

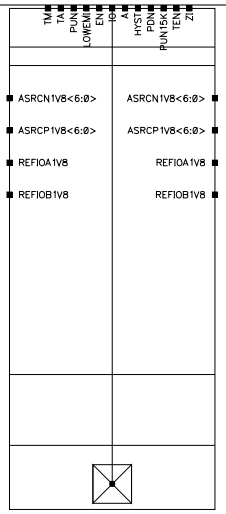
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

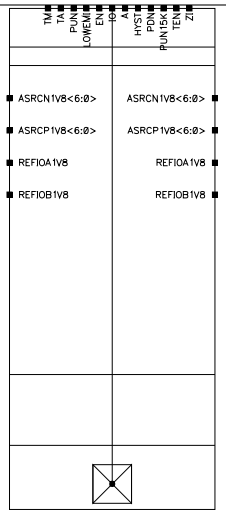
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

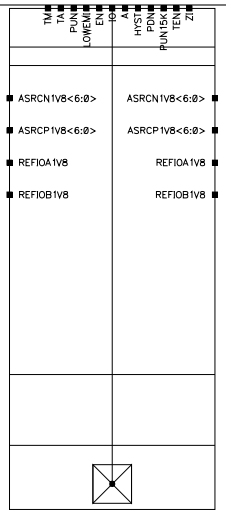
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

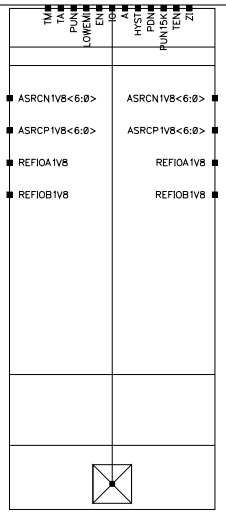
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

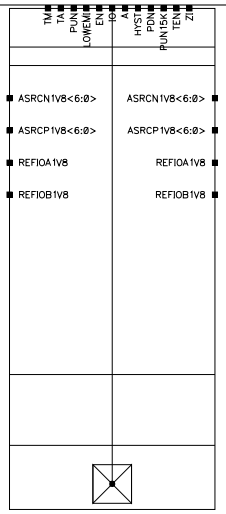
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

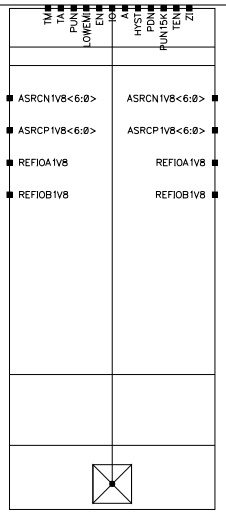
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

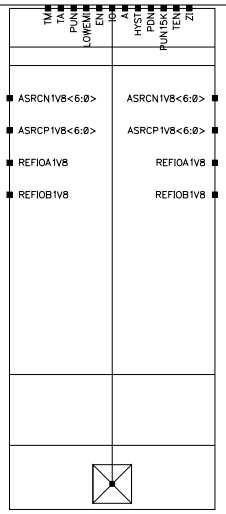
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

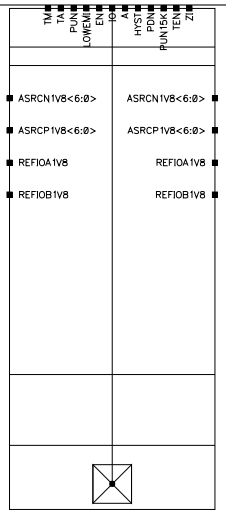
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

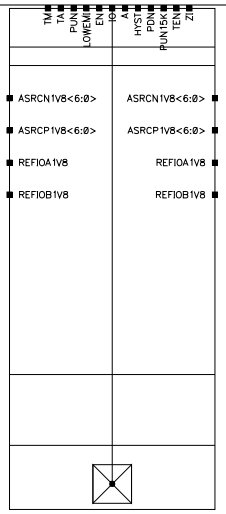
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

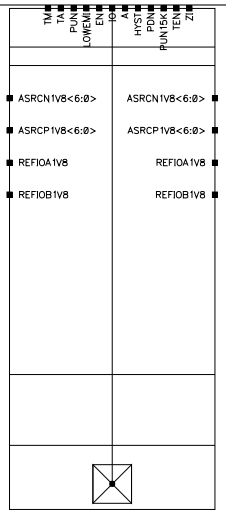
Physical Dimensions

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.	1.3881	1.3262
IO Max Load	51.388	51.326
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.648 + 0.201*Tr + 0.239*C	2.052 + 0.385*Tr + 0.269*C
R-010	4.031 + 0.011*Tr + 0.141*C	5.584 + 0.246*Tr + 0.141*C
F-000	1.122 + 0.195*Tr + 0.233*C	1.427 + 0.387*Tr + 0.265*C
R-000	3.146 + 0.008*Tr + 0.117*C	4.189 + 0.241*Tr + 0.120*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.658 + 0.136*Tr	0.739 + 0.373*Tr
LZ-10	0.506 + 0.138*Tr	0.635 + 0.375*Tr
HZ-00	0.658 + 0.142*Tr	0.738 + 0.376*Tr
LZ-00	0.506 + 0.137*Tr	0.635 + 0.374*Tr
ZH-10	4.109 + 0.171*Tr + 0.141*C	5.725 + 0.480*Tr + 0.141*C
ZL-10	1.700 + 0.162*Tr + 0.239*C	2.148 + 0.477*Tr + 0.269*C
ZH-00	3.199 + 0.173*Tr + 0.117*C	4.287 + 0.475*Tr + 0.120*C
ZL-00	1.146 + 0.161*Tr + 0.233*C	1.494 + 0.477*Tr + 0.265*C
Path IO-ZI (for pins HYST)		
F-1	0.469 + 0.224*Tr + 0.185*C	0.577 + 0.345*Tr + 0.302*C
R-1	0.477 + 0.191*Tr + 0.124*C	0.542 + 0.324*Tr + 0.166*C
F-0	0.426 + 0.073*Tr + 0.177*C	0.581 + 0.110*Tr + 0.265*C
R-0	0.437 + 0.038*Tr + 0.125*C	0.572 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.649 + 0.196*Tr + 0.239*C	2.051 + 0.392*Tr + 0.269*C
R-101	4.030 + 0.012*Tr + 0.141*C	5.583 + 0.250*Tr + 0.141*C
F-001	1.121 + 0.195*Tr + 0.233*C	1.428 + 0.396*Tr + 0.265*C
R-001	3.146 + 0.012*Tr + 0.117*C	4.185 + 0.249*Tr + 0.120*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.657 + 0.135*Tr	0.737 + 0.376*Tr
LZ-01	0.505 + 0.140*Tr	0.634 + 0.376*Tr
HZ-11	0.656 + 0.144*Tr	0.737 + 0.375*Tr
LZ-11	0.505 + 0.140*Tr	0.633 + 0.378*Tr
ZH-01	3.201 + 0.168*Tr + 0.117*C	4.286 + 0.472*Tr + 0.120*C
ZL-01	1.147 + 0.160*Tr + 0.233*C	1.496 + 0.475*Tr + 0.265*C
ZH-11	4.110 + 0.170*Tr + 0.141*C	5.727 + 0.478*Tr + 0.141*C
ZL-11	1.702 + 0.161*Tr + 0.239*C	2.150 + 0.472*Tr + 0.269*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.653 + 0.190*Tr	0.727 + 0.390*Tr
LZ-011	0.348 + 0.050*Tr	0.397 + 0.571*Tr
HZ-110	0.679 + 0.254*Tr	0.774 + 0.425*Tr

LZ-110	0.351 + 0.270*Tr	0.430 + 0.574*Tr
HZ-001	0.653 + 0.189*Tr	0.727 + 0.389*Tr
LZ-001	0.329 + 0.093*Tr	0.397 + 0.569*Tr
HZ-100	0.678 + 0.258*Tr	0.774 + 0.424*Tr
LZ-100	0.351 + 0.269*Tr	0.430 + 0.572*Tr
ZH-011	4.105 + 0.205*Tr + 0.141*C	5.715 + 0.472*Tr + 0.141*C
ZL-011	1.696 + 0.200*Tr + 0.239*C	2.137 + 0.481*Tr + 0.269*C
ZH-110	4.118 - 0.031*Tr + 0.141*C	5.749 + 0.216*Tr + 0.141*C
ZL-110	1.711 - 0.023*Tr + 0.239*C	2.169 + 0.245*Tr + 0.269*C
ZH-001	3.194 + 0.213*Tr + 0.117*C	4.271 + 0.490*Tr + 0.120*C
ZL-001	1.143 + 0.201*Tr + 0.233*C	1.482 + 0.478*Tr + 0.265*C
ZH-100	3.208 - 0.032*Tr + 0.117*C	4.298 + 0.227*Tr + 0.120*C
ZL-100	1.159 - 0.025*Tr + 0.233*C	1.514 + 0.241*Tr + 0.265*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.657 - 0.021*Tr + 0.239*C	2.059 + 0.228*Tr + 0.269*C
R-10100	4.052 + 0.260*Tr + 0.141*C	5.619 + 0.441*Tr + 0.141*C
F-00110	1.642 + 0.222*Tr + 0.239*C	2.039 + 0.364*Tr + 0.269*C
R-00110	4.028 + 0.024*Tr + 0.141*C	5.577 + 0.231*Tr + 0.141*C
F-10000	1.132 - 0.028*Tr + 0.233*C	1.436 + 0.230*Tr + 0.265*C
R-10000	3.168 + 0.263*Tr + 0.117*C	4.222 + 0.442*Tr + 0.120*C
F-00010	1.116 + 0.219*Tr + 0.233*C	1.415 + 0.367*Tr + 0.265*C
R-00010	3.143 + 0.027*Tr + 0.117*C	4.181 + 0.225*Tr + 0.120*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	0.265 + 0.194*C	0.217 - 0.002*Tr + 0.216*C
R-010	1.213 + 0.064*C	1.147 + 0.066*C
F-000	0.118 - 0.002*Tr + 0.196*C	0.099 + 0.002*Tr + 0.219*C
R-000	0.896 - 0.004*Tr + 0.058*C	0.831 + 0.002*Tr + 0.063*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	1.217 + 0.064*C	1.152 - 0.001*Tr + 0.066*C
ZL-10	0.274 + 0.194*C	0.221 + 0.216*C
ZH-00	0.899 + 0.058*C	0.835 - 0.002*Tr + 0.063*C
ZL-00	0.123 + 0.196*C	0.103 + 0.001*Tr + 0.219*C
Path IO-ZI (for pins HYST)		
F-1	0.007 + 0.136*C	0.009 + 0.189*C
R-1	0.006 + 0.085*C	0.009 + 0.131*C
F-0	0.007 + 0.137*C	0.009 + 0.188*C
R-0	0.006 + 0.086*C	0.009 + 0.130*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.264 - 0.003*Tr + 0.194*C	0.217 - 0.004*Tr + 0.216*C
R-101	1.212 + 0.064*C	1.147 + 0.066*C
F-001	0.116 + 0.002*Tr + 0.196*C	0.099 + 0.219*C
R-001	0.896 - 0.005*Tr + 0.058*C	0.831 + 0.063*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	0.900 - 0.001*Tr + 0.058*C	0.837 + 0.002*Tr + 0.063*C
ZL-01	0.122 + 0.003*Tr + 0.196*C	0.105 - 0.001*Tr + 0.218*C
ZH-11	1.218 + 0.064*C	1.151 - 0.003*Tr + 0.066*C
ZL-11	0.273 + 0.194*C	0.222 + 0.003*Tr + 0.216*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	1.218 - 0.003*Tr + 0.064*C	1.150 + 0.004*Tr + 0.066*C
ZL-011	0.273 + 0.002*Tr + 0.194*C	0.223 + 0.216*C
ZH-110	1.218 - 0.003*Tr + 0.064*C	1.150 - 0.002*Tr + 0.066*C
ZL-110	0.273 + 0.194*C	0.224 - 0.001*Tr + 0.216*C
ZH-001	0.899 - 0.002*Tr + 0.058*C	0.836 - 0.004*Tr + 0.063*C
ZL-001	0.122 + 0.003*Tr + 0.196*C	0.103 + 0.001*Tr + 0.219*C
ZH-100	0.899 - 0.003*Tr + 0.058*C	0.836 + 0.063*C
ZL-100	0.123 + 0.001*Tr + 0.196*C	0.104 + 0.218*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.262 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-10100	1.211 + 0.002*Tr + 0.064*C	1.146 + 0.002*Tr + 0.066*C
F-00110	0.263 + 0.003*Tr + 0.194*C	0.214 + 0.004*Tr + 0.216*C
R-00110	1.212 + 0.064*C	1.146 + 0.066*C
F-10000	0.115 + 0.005*Tr + 0.196*C	0.098 + 0.002*Tr + 0.219*C
R-10000	0.896 + 0.058*C	0.831 - 0.002*Tr + 0.063*C
F-00010	0.118 + 0.002*Tr + 0.196*C	0.100 - 0.001*Tr + 0.219*C
R-00010	0.895 + 0.058*C	0.831 + 0.003*Tr + 0.063*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.377e-03
worst 0.90 -40	6.622e-07	5.635e-07

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	0.644 + 0.938*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	5.969 + 0.029*Tr	7.029 - 0.029*Tr	3.431 + 0.027*Tr	3.956 + 0.026*Tr
ZI toggling	0.330 + 0.252*Tr	0.443 + 0.437*Tr	0.162 + 0.018*Tr	0.243 + 0.083*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.

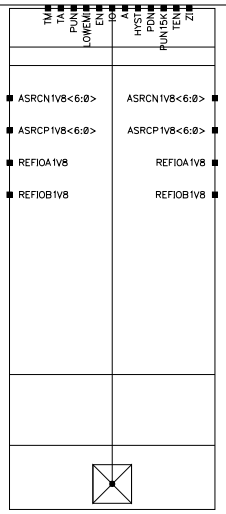
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

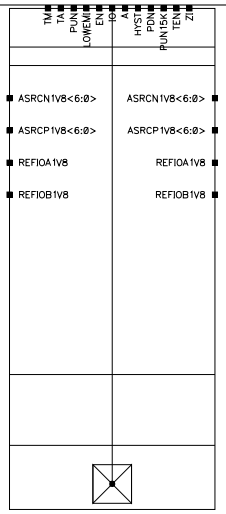
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

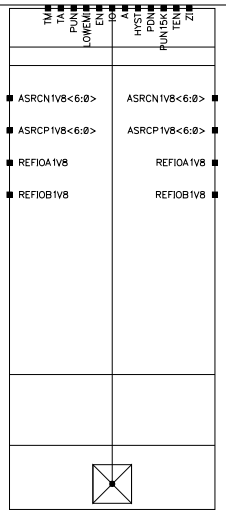
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

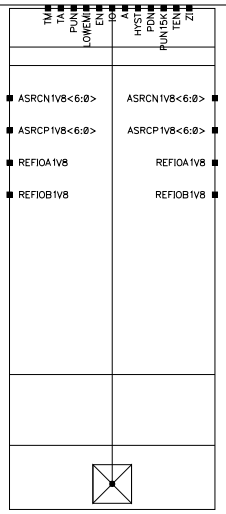
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

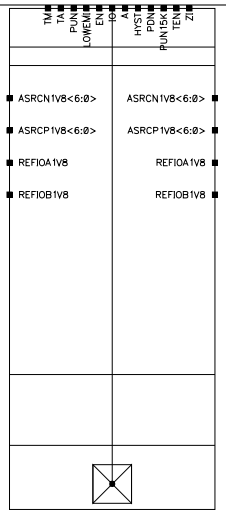
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

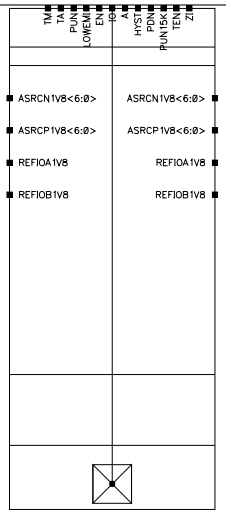
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

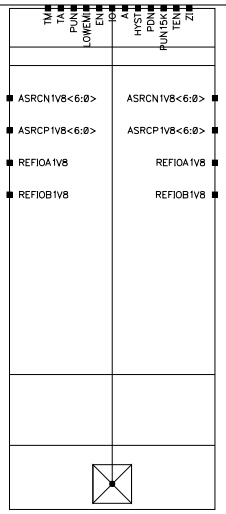
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

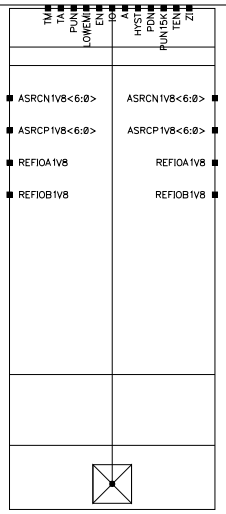
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

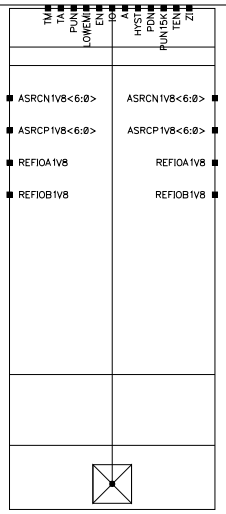
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

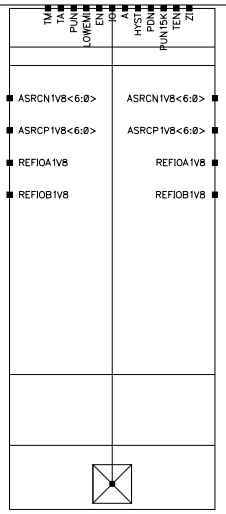
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

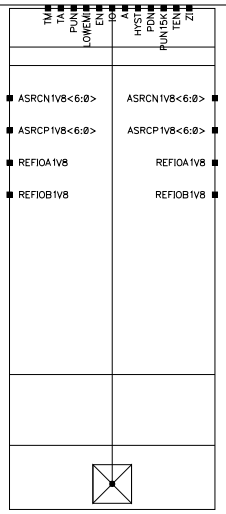
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

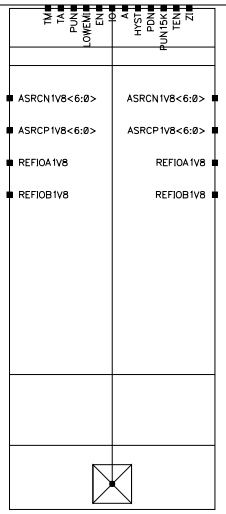
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

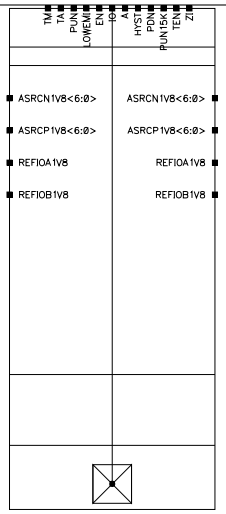
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

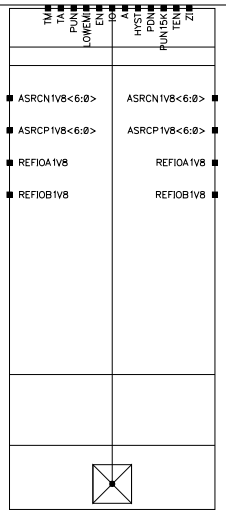
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

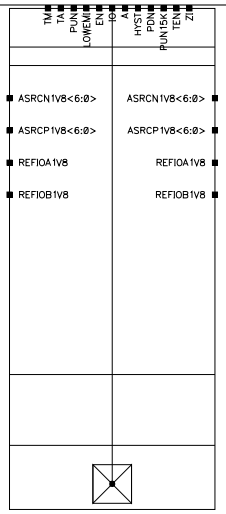
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

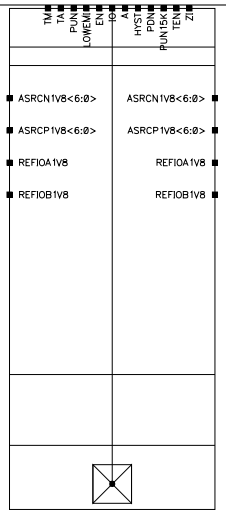
Physical Dimensions

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.	1.4550	1.3901
IO Max Load	101.455	101.390
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.687 + 0.196*Tr + 0.123*C	2.149 + 0.386*Tr + 0.138*C
R-010	3.777 + 0.011*Tr + 0.069*C	5.030 + 0.250*Tr + 0.070*C
F-000	1.355 + 0.193*Tr + 0.120*C	1.716 + 0.383*Tr + 0.136*C
R-000	3.217 + 0.013*Tr + 0.063*C	4.251 + 0.246*Tr + 0.064*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.823 + 0.125*Tr	0.859 + 0.380*Tr
LZ-10	0.511 + 0.139*Tr	0.640 + 0.375*Tr
HZ-00	0.818 + 0.135*Tr	0.858 + 0.380*Tr
LZ-00	0.511 + 0.138*Tr	0.640 + 0.374*Tr
ZH-10	3.827 + 0.170*Tr + 0.069*C	5.123 + 0.488*Tr + 0.070*C
ZL-10	1.732 + 0.166*Tr + 0.123*C	2.253 + 0.469*Tr + 0.138*C
ZH-00	3.256 + 0.175*Tr + 0.063*C	4.330 + 0.483*Tr + 0.064*C
ZL-00	1.374 + 0.166*Tr + 0.121*C	1.797 + 0.473*Tr + 0.136*C
Path IO-ZI (for pins HYST)		
F-1	0.479 + 0.222*Tr + 0.102*C	0.579 + 0.345*Tr + 0.284*C
R-1	0.477 + 0.190*Tr + 0.116*C	0.548 + 0.323*Tr + 0.175*C
F-0	0.427 + 0.073*Tr + 0.177*C	0.586 + 0.109*Tr + 0.223*C
R-0	0.435 + 0.038*Tr + 0.124*C	0.571 + 0.078*Tr + 0.168*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.689 + 0.190*Tr + 0.123*C	2.151 + 0.389*Tr + 0.138*C
R-101	3.776 + 0.014*Tr + 0.069*C	5.029 + 0.254*Tr + 0.070*C
F-001	1.353 + 0.196*Tr + 0.120*C	1.717 + 0.386*Tr + 0.136*C
R-001	3.217 + 0.013*Tr + 0.063*C	4.248 + 0.250*Tr + 0.064*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.818 + 0.138*Tr	0.857 + 0.379*Tr
LZ-01	0.511 + 0.139*Tr	0.639 + 0.377*Tr
HZ-11	0.822 + 0.129*Tr	0.858 + 0.381*Tr
LZ-11	0.511 + 0.140*Tr	0.639 + 0.377*Tr
ZH-01	3.259 + 0.170*Tr + 0.063*C	4.331 + 0.486*Tr + 0.064*C
ZL-01	1.377 + 0.161*Tr + 0.121*C	1.798 + 0.464*Tr + 0.136*C
ZH-11	3.828 + 0.167*Tr + 0.069*C	5.131 + 0.472*Tr + 0.070*C
ZL-11	1.733 + 0.167*Tr + 0.123*C	2.257 + 0.456*Tr + 0.137*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.820 + 0.171*Tr	0.847 + 0.393*Tr
LZ-011	0.332 + 0.037*Tr	0.403 + 0.245*Tr
HZ-110	0.844 + 0.256*Tr	0.896 + 0.424*Tr

LZ-110	0.357 + 0.270*Tr	0.448 + 0.448*Tr
HZ-001	0.816 + 0.179*Tr	0.846 + 0.394*Tr
LZ-001	0.333 + 0.043*Tr	0.403 + 0.252*Tr
HZ-100	0.839 + 0.261*Tr	0.894 + 0.431*Tr
LZ-100	0.357 + 0.269*Tr	0.437 + 0.554*Tr
ZH-011	3.822 + 0.207*Tr + 0.069*C	5.111 + 0.485*Tr + 0.070*C
ZL-011	1.727 + 0.205*Tr + 0.123*C	2.240 + 0.475*Tr + 0.138*C
ZH-110	3.835 - 0.027*Tr + 0.069*C	5.146 + 0.216*Tr + 0.070*C
ZL-110	1.743 - 0.018*Tr + 0.123*C	2.274 + 0.238*Tr + 0.137*C
ZH-001	3.252 + 0.212*Tr + 0.063*C	4.317 + 0.490*Tr + 0.064*C
ZL-001	1.371 + 0.201*Tr + 0.121*C	1.783 + 0.477*Tr + 0.136*C
ZH-100	3.267 - 0.032*Tr + 0.063*C	4.351 + 0.216*Tr + 0.064*C
ZL-100	1.393 - 0.033*Tr + 0.121*C	1.816 + 0.240*Tr + 0.136*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.696 - 0.027*Tr + 0.123*C	2.159 + 0.226*Tr + 0.138*C
R-10100	3.799 + 0.262*Tr + 0.069*C	5.066 + 0.438*Tr + 0.070*C
F-00110	1.682 + 0.220*Tr + 0.123*C	2.137 + 0.367*Tr + 0.138*C
R-00110	3.774 + 0.025*Tr + 0.069*C	5.022 + 0.233*Tr + 0.070*C
F-10000	1.364 - 0.023*Tr + 0.120*C	1.723 + 0.228*Tr + 0.136*C
R-10000	3.239 + 0.261*Tr + 0.063*C	4.285 + 0.443*Tr + 0.064*C
F-00010	1.348 + 0.216*Tr + 0.120*C	1.701 + 0.369*Tr + 0.136*C
R-00010	3.215 + 0.025*Tr + 0.063*C	4.243 + 0.233*Tr + 0.064*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	0.296 - 0.002*Tr + 0.097*C	0.263 + 0.108*C
R-010	1.067 - 0.007*Tr + 0.032*C	1.013 - 0.004*Tr + 0.033*C
F-000	0.216 - 0.005*Tr + 0.097*C	0.195 - 0.001*Tr + 0.108*C
R-000	0.904 + 0.002*Tr + 0.030*C	0.855 + 0.032*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	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-10	0.310 - 0.005*Tr + 0.097*C	0.270 + 0.004*Tr + 0.108*C
ZH-00	0.910 - 0.001*Tr + 0.030*C	0.862 - 0.007*Tr + 0.032*C
ZL-00	0.229 + 0.097*C	0.203 - 0.006*Tr + 0.108*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 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.190*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.296 - 0.001*Tr + 0.097*C	0.263 - 0.005*Tr + 0.108*C
R-101	1.066 - 0.002*Tr + 0.031*C	1.011 + 0.033*C
F-001	0.215 + 0.097*C	0.197 - 0.005*Tr + 0.108*C
R-001	0.906 - 0.006*Tr + 0.030*C	0.855 - 0.001*Tr + 0.032*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	0.909 + 0.030*C	0.862 - 0.006*Tr + 0.032*C
ZL-01	0.231 - 0.005*Tr + 0.097*C	0.204 - 0.005*Tr + 0.108*C
ZH-11	1.070 - 0.003*Tr + 0.031*C	1.013 + 0.033*C
ZL-11	0.309 + 0.001*Tr + 0.097*C	0.270 + 0.003*Tr + 0.108*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	1.070 - 0.002*Tr + 0.031*C	1.014 + 0.033*C
ZL-011	0.309 + 0.003*Tr + 0.097*C	0.271 + 0.001*Tr + 0.108*C
ZH-110	1.070 + 0.031*C	1.014 - 0.002*Tr + 0.033*C
ZL-110	0.307 + 0.005*Tr + 0.097*C	0.271 - 0.004*Tr + 0.108*C
ZH-001	0.909 + 0.030*C	0.861 - 0.005*Tr + 0.032*C
ZL-001	0.228 + 0.001*Tr + 0.097*C	0.202 - 0.005*Tr + 0.108*C
ZH-100	0.909 - 0.004*Tr + 0.030*C	0.856 - 0.001*Tr + 0.032*C
ZL-100	0.231 - 0.003*Tr + 0.097*C	0.203 - 0.003*Tr + 0.108*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.295 - 0.001*Tr + 0.097*C	0.260 - 0.002*Tr + 0.108*C
R-10100	1.067 - 0.002*Tr + 0.031*C	1.011 + 0.001*Tr + 0.033*C
F-00110	0.296 - 0.001*Tr + 0.097*C	0.261 + 0.108*C
R-00110	1.067 - 0.008*Tr + 0.032*C	1.013 - 0.003*Tr + 0.033*C
F-10000	0.216 + 0.097*C	0.195 + 0.108*C
R-10000	0.905 - 0.001*Tr + 0.030*C	0.856 - 0.003*Tr + 0.032*C
F-00010	0.215 - 0.006*Tr + 0.097*C	0.193 + 0.004*Tr + 0.108*C
R-00010	0.905 + 0.030*C	0.855 - 0.002*Tr + 0.032*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	3.984e-03
worst 0.90 -40	6.622e-07	5.871e-07

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	0.513 + 0.312*Tr	0.643 + 0.939*Tr	0.255 + 0.007*Tr	0.334 + 0.008*Tr
ZI toggling	0.279 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.147
For vdde1v8				
IO toggling/Output stable	6.576 + 0.040*Tr	7.731 - 0.018*Tr	3.755 + 0.024*Tr	4.288 + 0.080*Tr
ZI toggling	0.331 + 0.255*Tr	0.444 + 0.440*Tr	0.162 + 0.018*Tr	0.244 + 0.082*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.

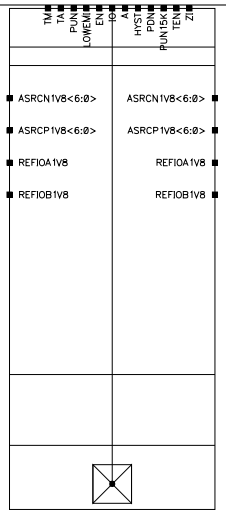
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

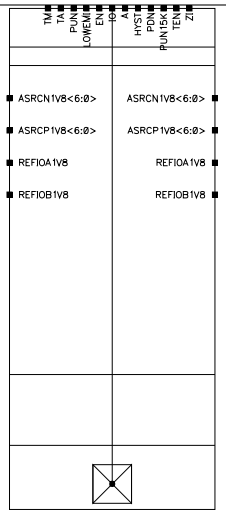
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

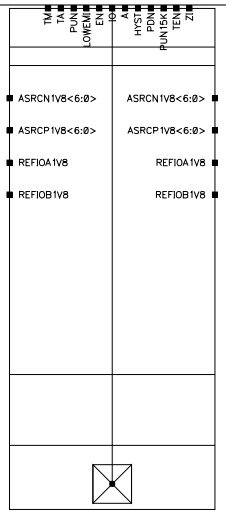
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

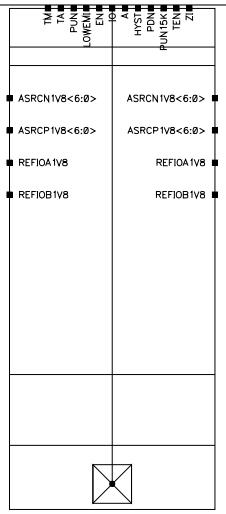
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

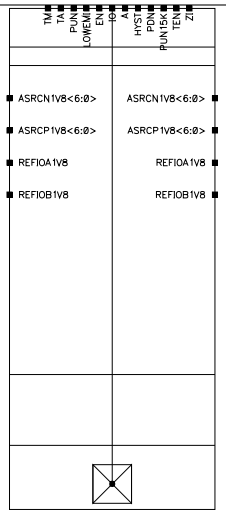
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

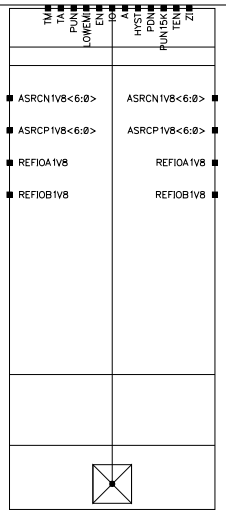
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

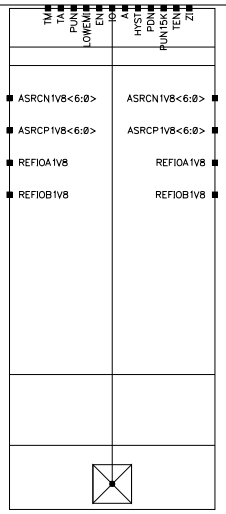
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

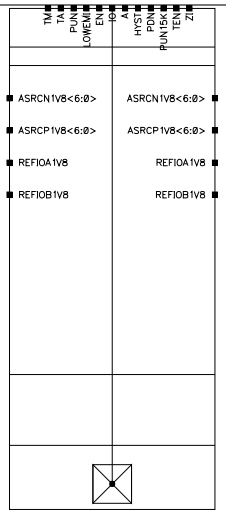
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

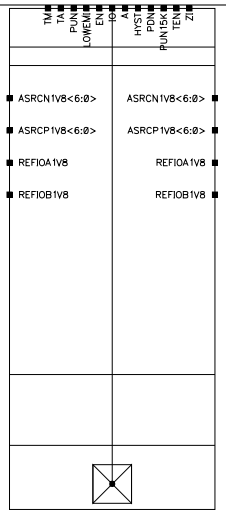
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

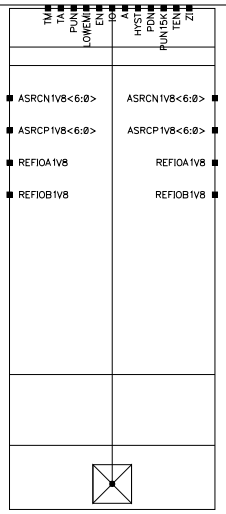
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

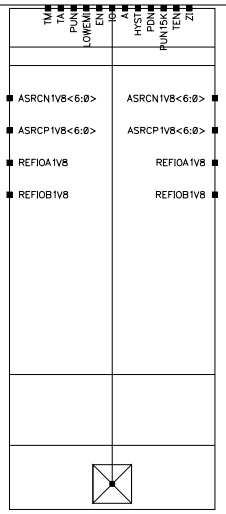
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

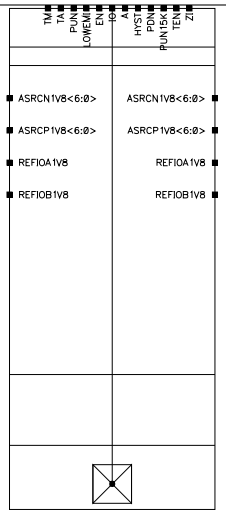
Physical Dimensions

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.	1.5045	1.4378
IO Max Load	201.505	201.438
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	1.924 + 0.198*Tr + 0.081*C	2.487 + 0.385*Tr + 0.091*C
R-010	3.591 + 0.011*Tr + 0.042*C	4.631 + 0.243*Tr + 0.044*C
F-000	1.523 + 0.196*Tr + 0.080*C	1.930 + 0.386*Tr + 0.090*C
R-000	3.084 + 0.011*Tr + 0.039*C	3.958 + 0.243*Tr + 0.041*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	0.887 + 0.141*Tr	0.921 + 0.369*Tr
LZ-10	0.518 + 0.136*Tr	0.646 + 0.374*Tr
HZ-00	0.884 + 0.153*Tr	0.919 + 0.375*Tr
LZ-00	0.518 + 0.136*Tr	0.646 + 0.375*Tr
ZH-10	3.627 + 0.171*Tr + 0.042*C	4.709 + 0.474*Tr + 0.044*C
ZL-10	1.977 + 0.166*Tr + 0.081*C	2.593 + 0.477*Tr + 0.091*C
ZH-00	3.113 + 0.173*Tr + 0.039*C	4.024 + 0.470*Tr + 0.041*C
ZL-00	1.543 + 0.166*Tr + 0.080*C	2.015 + 0.475*Tr + 0.090*C
Path IO-ZI (for pins HYST)		
F-1	0.470 + 0.223*Tr + 0.194*C	0.583 + 0.345*Tr + 0.195*C
R-1	0.476 + 0.191*Tr + 0.129*C	0.553 + 0.323*Tr + 0.134*C
F-0	0.427 + 0.073*Tr + 0.176*C	0.579 + 0.111*Tr + 0.275*C
R-0	0.437 + 0.038*Tr + 0.124*C	0.574 + 0.078*Tr + 0.167*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	1.925 + 0.196*Tr + 0.081*C	2.486 + 0.395*Tr + 0.091*C
R-101	3.590 + 0.010*Tr + 0.042*C	4.628 + 0.249*Tr + 0.044*C
F-001	1.523 + 0.196*Tr + 0.080*C	1.932 + 0.389*Tr + 0.090*C
R-001	3.082 + 0.011*Tr + 0.039*C	3.955 + 0.251*Tr + 0.041*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	0.887 + 0.148*Tr	0.916 + 0.377*Tr
LZ-01	0.517 + 0.139*Tr	0.644 + 0.377*Tr
HZ-11	0.883 + 0.155*Tr	0.920 + 0.375*Tr
LZ-11	0.517 + 0.140*Tr	0.644 + 0.376*Tr
ZH-01	3.112 + 0.173*Tr + 0.039*C	4.028 + 0.465*Tr + 0.041*C
ZL-01	1.545 + 0.164*Tr + 0.080*C	2.018 + 0.471*Tr + 0.090*C
ZH-11	3.626 + 0.169*Tr + 0.042*C	4.711 + 0.475*Tr + 0.044*C
ZL-11	1.977 + 0.171*Tr + 0.081*C	2.592 + 0.479*Tr + 0.091*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	0.886 + 0.179*Tr	0.909 + 0.388*Tr
LZ-011	0.339 + 0.037*Tr	0.408 + 0.244*Tr
HZ-110	0.907 + 0.272*Tr	0.953 + 0.428*Tr

LZ-110	0.363 + 0.269*Tr	0.453 + 0.448*Tr
HZ-001	0.883 + 0.181*Tr	0.906 + 0.391*Tr
LZ-001	0.339 + 0.041*Tr	0.408 + 0.248*Tr
HZ-100	0.906 + 0.268*Tr	0.956 + 0.423*Tr
LZ-100	0.363 + 0.269*Tr	0.453 + 0.451*Tr
ZH-011	3.623 + 0.207*Tr + 0.042*C	4.696 + 0.483*Tr + 0.044*C
ZL-011	1.976 + 0.199*Tr + 0.081*C	2.578 + 0.488*Tr + 0.091*C
ZH-110	3.635 - 0.030*Tr + 0.042*C	4.729 + 0.214*Tr + 0.044*C
ZL-110	1.990 - 0.022*Tr + 0.081*C	2.613 + 0.248*Tr + 0.091*C
ZH-001	3.109 + 0.209*Tr + 0.039*C	4.013 + 0.478*Tr + 0.041*C
ZL-001	1.540 + 0.203*Tr + 0.080*C	2.002 + 0.486*Tr + 0.090*C
ZH-100	3.122 - 0.031*Tr + 0.039*C	4.042 + 0.224*Tr + 0.041*C
ZL-100	1.558 - 0.023*Tr + 0.080*C	2.034 + 0.246*Tr + 0.090*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	1.931 - 0.016*Tr + 0.081*C	2.493 + 0.235*Tr + 0.091*C
R-10100	3.613 + 0.257*Tr + 0.042*C	4.665 + 0.440*Tr + 0.044*C
F-00110	1.918 + 0.220*Tr + 0.081*C	2.473 + 0.367*Tr + 0.091*C
R-00110	3.587 + 0.026*Tr + 0.042*C	4.623 + 0.227*Tr + 0.044*C
F-10000	1.531 - 0.024*Tr + 0.080*C	1.940 + 0.229*Tr + 0.090*C
R-10000	3.105 + 0.261*Tr + 0.039*C	3.992 + 0.436*Tr + 0.041*C
F-00010	1.516 + 0.220*Tr + 0.080*C	1.918 + 0.368*Tr + 0.090*C
R-00010	3.081 + 0.026*Tr + 0.039*C	3.950 + 0.227*Tr + 0.041*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	0.338 + 0.064*C	0.312 + 0.001*Tr + 0.072*C
R-010	0.972 + 0.022*C	0.910 + 0.024*C
F-000	0.243 + 0.065*C	0.225 + 0.004*Tr + 0.072*C
R-000	0.835 - 0.001*Tr + 0.021*C	0.771 + 0.024*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	0.978 + 0.022*C	0.910 + 0.024*C
ZL-10	0.357 - 0.009*Tr + 0.064*C	0.323 - 0.008*Tr + 0.072*C
ZH-00	0.839 + 0.021*C	0.775 + 0.011*Tr + 0.024*C
ZL-00	0.257 + 0.005*Tr + 0.065*C	0.233 + 0.001*Tr + 0.072*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	0.008 + 0.129*C
F-0	0.007 + 0.137*C	0.009 + 0.189*C
R-0	0.006 + 0.086*C	0.009 + 0.129*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.339 + 0.064*C	0.311 + 0.072*C
R-101	0.971 - 0.001*Tr + 0.022*C	0.909 + 0.024*C
F-001	0.241 + 0.006*Tr + 0.065*C	0.226 + 0.002*Tr + 0.072*C
R-001	0.834 - 0.001*Tr + 0.021*C	0.771 - 0.003*Tr + 0.024*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	0.840 - 0.001*Tr + 0.021*C	0.778 + 0.003*Tr + 0.024*C
ZL-01	0.259 + 0.065*C	0.235 - 0.002*Tr + 0.072*C
ZH-11	0.979 - 0.006*Tr + 0.022*C	0.912 - 0.003*Tr + 0.024*C
ZL-11	0.352 - 0.003*Tr + 0.064*C	0.320 + 0.003*Tr + 0.072*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	0.977 + 0.022*C	0.910 + 0.003*Tr + 0.024*C
ZL-011	0.357 - 0.010*Tr + 0.064*C	0.321 + 0.005*Tr + 0.072*C
ZH-110	0.977 + 0.022*C	0.911 + 0.024*C
ZL-110	0.355 - 0.008*Tr + 0.064*C	0.326 - 0.014*Tr + 0.072*C
ZH-001	0.840 - 0.003*Tr + 0.021*C	0.775 + 0.009*Tr + 0.024*C
ZL-001	0.256 + 0.007*Tr + 0.065*C	0.233 + 0.003*Tr + 0.072*C
ZH-100	0.839 - 0.003*Tr + 0.021*C	0.775 - 0.003*Tr + 0.024*C
ZL-100	0.259 + 0.065*C	0.233 + 0.072*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.339 - 0.001*Tr + 0.064*C	0.311 + 0.001*Tr + 0.072*C
R-10100	0.972 - 0.003*Tr + 0.022*C	0.909 - 0.003*Tr + 0.024*C
F-00110	0.340 - 0.007*Tr + 0.064*C	0.313 - 0.001*Tr + 0.072*C
R-00110	0.971 + 0.004*Tr + 0.022*C	0.909 - 0.001*Tr + 0.024*C
F-10000	0.240 + 0.003*Tr + 0.065*C	0.228 - 0.008*Tr + 0.072*C
R-10000	0.833 + 0.002*Tr + 0.021*C	0.771 + 0.024*C
F-00010	0.243 - 0.004*Tr + 0.065*C	0.227 + 0.072*C
R-00010	0.835 - 0.002*Tr + 0.021*C	0.772 - 0.003*Tr + 0.024*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.394e-03
worst 0.90 -40	6.622e-07	5.942e-07

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	0.512 + 0.312*Tr	0.642 + 0.940*Tr	0.255 + 0.006*Tr	0.333 + 0.008*Tr
ZI toggling	0.280 + 0.001*Tr	0.282 + 0.007*Tr	0.146	0.146
For vdde1v8				
IO toggling/Output stable	6.933 + 0.078*Tr	8.219 + 0.073*Tr	4.009	4.545 - 0.027*Tr
ZI toggling	0.334 + 0.256*Tr	0.449 + 0.441*Tr	0.162 + 0.018*Tr	0.244 + 0.083*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.

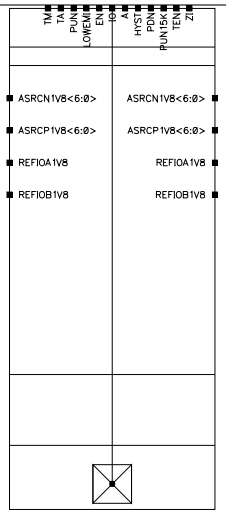
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

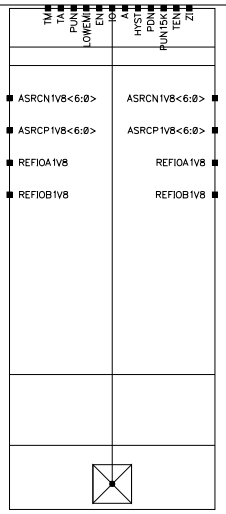
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

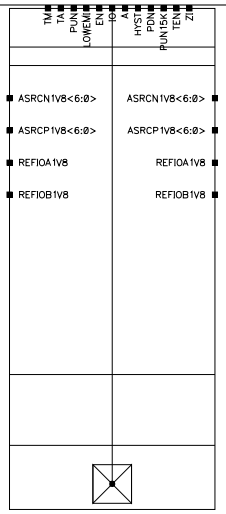
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

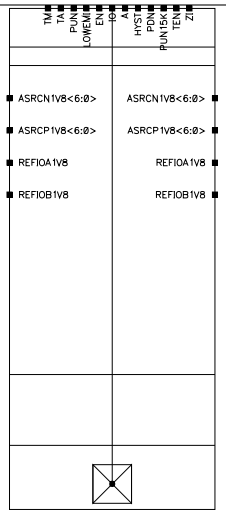
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

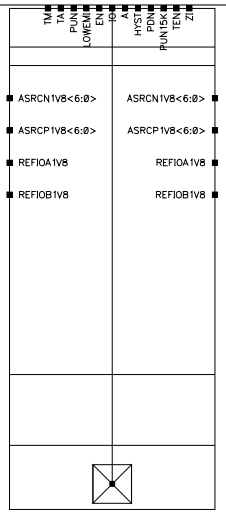
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

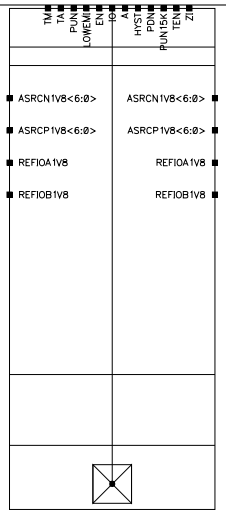
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

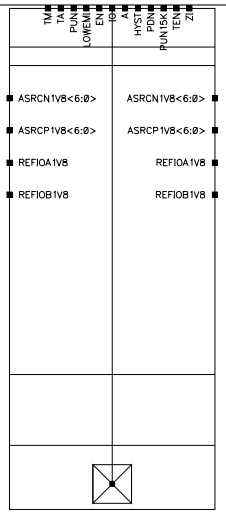
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

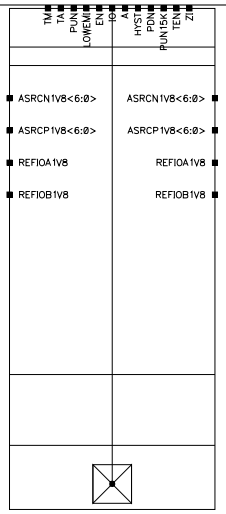
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

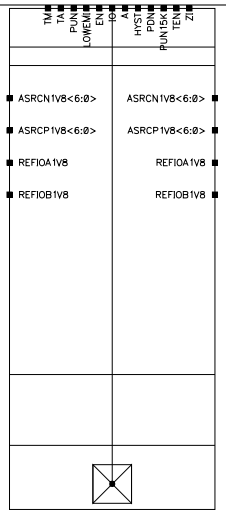
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

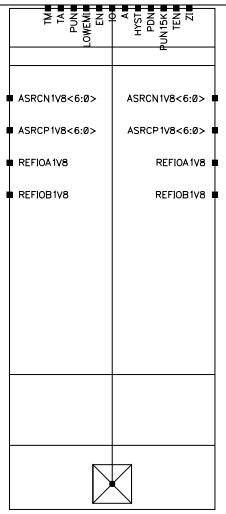
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

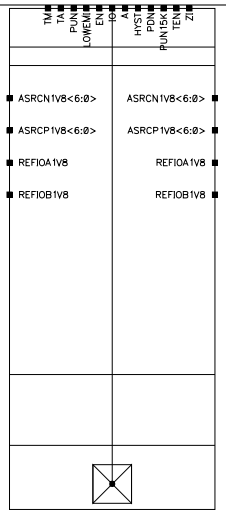
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*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.

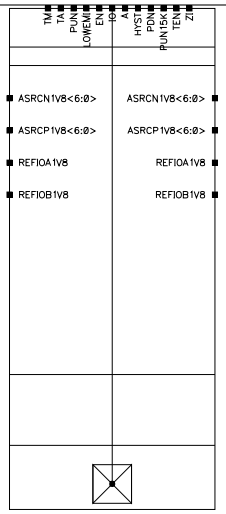
Physical Dimensions

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.	1.5759	1.5072
IO Max Load	201.576	201.507
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 - 1.65	0.0 - 1.35

IO (Input)	Delay thres. rising (V)	0.825	0.675
IO (Input)	Delay thres. falling (V)	0.825	0.675
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 - 1.65	0.0 - 1.35
IO (Output)	Delay thres. rising (V)	0.825	0.675
IO (Output)	Delay thres. falling (V)	0.825	0.675
IO (Output)	Slope thres. low (V)	0.495	0.405
IO (Output)	Slope thres. high (V)	1.155	0.945

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	2.056 + 0.199*Tr + 0.065*C	2.691 + 0.384*Tr + 0.072*C
R-010	4.193 + 0.011*Tr + 0.042*C	5.615 + 0.246*Tr + 0.043*C
F-000	1.512 + 0.196*Tr + 0.062*C	1.893 + 0.388*Tr + 0.069*C
R-000	2.883 + 0.017*Tr + 0.033*C	3.751 + 0.245*Tr + 0.035*C
Path EN-IO (for pins LOWEMI TM)		
HZ-10	1.009 + 0.127*Tr	1.012 + 0.373*Tr
LZ-10	0.522 + 0.139*Tr	0.649 + 0.373*Tr
HZ-00	1.009 + 0.128*Tr	1.016 + 0.370*Tr
LZ-00	0.521 + 0.139*Tr	0.649 + 0.373*Tr
ZH-10	4.236 + 0.168*Tr + 0.042*C	5.698 + 0.468*Tr + 0.043*C
ZL-10	2.091 + 0.176*Tr + 0.065*C	2.797 + 0.481*Tr + 0.072*C
ZH-00	2.907 + 0.169*Tr + 0.033*C	3.803 + 0.472*Tr + 0.035*C
ZL-00	1.492 + 0.166*Tr + 0.062*C	1.966 + 0.473*Tr + 0.069*C
Path IO-ZI (for pins HYST)		
F-1	0.466 + 0.223*Tr + 0.185*C	0.581 + 0.344*Tr + 0.187*C
R-1	0.471 + 0.191*Tr + 0.136*C	0.539 + 0.323*Tr + 0.209*C
F-0	0.423 + 0.073*Tr + 0.182*C	0.579 + 0.110*Tr + 0.232*C
R-0	0.431 + 0.038*Tr + 0.131*C	0.568 + 0.078*Tr + 0.177*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	2.056 + 0.197*Tr + 0.065*C	2.688 + 0.395*Tr + 0.072*C
R-101	4.193 + 0.008*Tr + 0.042*C	5.613 + 0.252*Tr + 0.043*C
F-001	1.511 + 0.199*Tr + 0.062*C	1.895 + 0.387*Tr + 0.069*C
R-001	2.884 + 0.016*Tr + 0.033*C	3.750 + 0.247*Tr + 0.035*C
Path TEN-IO (for pins LOWEMI TM)		
HZ-01	1.008 + 0.131*Tr	1.012 + 0.375*Tr
LZ-01	0.522 + 0.138*Tr	0.648 + 0.375*Tr
HZ-11	1.006 + 0.132*Tr	1.013 + 0.371*Tr
LZ-11	0.521 + 0.138*Tr	0.648 + 0.375*Tr
ZH-01	2.908 + 0.169*Tr + 0.033*C	3.809 + 0.467*Tr + 0.035*C
ZL-01	1.493 + 0.168*Tr + 0.062*C	1.967 + 0.479*Tr + 0.069*C
ZH-11	4.236 + 0.166*Tr + 0.042*C	5.698 + 0.466*Tr + 0.043*C
ZL-11	2.093 + 0.167*Tr + 0.065*C	2.800 + 0.481*Tr + 0.072*C
Path TM-IO (for pins EN LOWEMI TEN)		
HZ-011	1.003 + 0.193*Tr	1.002 + 0.391*Tr
LZ-011	0.343 + 0.038*Tr	0.413 + 0.246*Tr
HZ-110	1.028 + 0.266*Tr	1.048 + 0.429*Tr

LZ-110	0.368 + 0.270*Tr	0.457 + 0.448*Tr
HZ-001	1.002 + 0.194*Tr	1.003 + 0.389*Tr
LZ-001	0.344 + 0.042*Tr	0.412 + 0.250*Tr
HZ-100	1.027 + 0.267*Tr	1.046 + 0.431*Tr
LZ-100	0.367 + 0.269*Tr	0.457 + 0.449*Tr
ZH-011	4.230 + 0.202*Tr + 0.042*C	5.685 + 0.486*Tr + 0.043*C
ZL-011	2.088 + 0.211*Tr + 0.065*C	2.786 + 0.484*Tr + 0.072*C
ZH-110	4.245 - 0.039*Tr + 0.042*C	5.711 + 0.222*Tr + 0.043*C
ZL-110	2.103 - 0.014*Tr + 0.065*C	2.816 + 0.251*Tr + 0.072*C
ZH-001	2.902 + 0.207*Tr + 0.033*C	3.796 + 0.479*Tr + 0.035*C
ZL-001	1.489 + 0.203*Tr + 0.062*C	1.954 + 0.480*Tr + 0.069*C
ZH-100	2.917 - 0.033*Tr + 0.033*C	3.824 + 0.219*Tr + 0.035*C
ZL-100	1.507 - 0.021*Tr + 0.062*C	1.985 + 0.243*Tr + 0.069*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	2.065 - 0.021*Tr + 0.065*C	2.697 + 0.232*Tr + 0.072*C
R-10100	4.215 + 0.255*Tr + 0.042*C	5.651 + 0.440*Tr + 0.043*C
F-00110	2.051 + 0.218*Tr + 0.065*C	2.676 + 0.374*Tr + 0.072*C
R-00110	4.189 + 0.027*Tr + 0.042*C	5.607 + 0.233*Tr + 0.043*C
F-10000	1.523 - 0.027*Tr + 0.062*C	1.900 + 0.228*Tr + 0.069*C
R-10000	2.906 + 0.260*Tr + 0.033*C	3.787 + 0.439*Tr + 0.035*C
F-00010	1.507 + 0.217*Tr + 0.062*C	1.880 + 0.367*Tr + 0.069*C
R-00010	2.882 + 0.026*Tr + 0.033*C	3.744 + 0.232*Tr + 0.035*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	0.440 + 0.001*Tr + 0.048*C	0.420 + 0.053*C
R-010	1.216 + 0.019*C	1.164 - 0.004*Tr + 0.020*C
F-000	0.270 - 0.003*Tr + 0.049*C	0.260 + 0.054*C
R-000	0.798 + 0.002*Tr + 0.017*C	0.753 + 0.002*Tr + 0.018*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	1.222 + 0.002*Tr + 0.019*C	1.168 - 0.001*Tr + 0.020*C
ZL-10	0.466 + 0.003*Tr + 0.048*C	0.432 - 0.005*Tr + 0.053*C
ZH-00	0.804 + 0.017*C	0.763 + 0.003*Tr + 0.018*C
ZL-00	0.298 + 0.003*Tr + 0.048*C	0.270 - 0.007*Tr + 0.054*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 + 0.131*C
F-0	0.005 + 0.137*C	0.006 + 0.188*C
R-0	0.005 + 0.085*C	0.006 + 0.128*C
Path TA-IO (for pins LOWEMI TEN TM)		
F-101	0.441 - 0.004*Tr + 0.048*C	0.421 + 0.004*Tr + 0.053*C
R-101	1.217 - 0.007*Tr + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-001	0.268 + 0.049*C	0.258 + 0.007*Tr + 0.054*C
R-001	0.798 + 0.003*Tr + 0.017*C	0.752 + 0.003*Tr + 0.018*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	0.806 - 0.003*Tr + 0.017*C	0.760 + 0.007*Tr + 0.018*C
ZL-01	0.298 + 0.002*Tr + 0.048*C	0.271 - 0.003*Tr + 0.054*C
ZH-11	1.223 + 0.019*C	1.169 + 0.004*Tr + 0.020*C
ZL-11	0.467 - 0.003*Tr + 0.048*C	0.435 + 0.053*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	1.224 - 0.004*Tr + 0.019*C	1.167 - 0.002*Tr + 0.020*C
ZL-011	0.467 + 0.048*C	0.431 - 0.005*Tr + 0.053*C
ZH-110	1.223 - 0.003*Tr + 0.019*C	1.168 + 0.020*C
ZL-110	0.465 + 0.002*Tr + 0.048*C	0.433 - 0.006*Tr + 0.053*C
ZH-001	0.806 - 0.004*Tr + 0.017*C	0.758 + 0.003*Tr + 0.018*C
ZL-001	0.297 + 0.048*C	0.270 - 0.004*Tr + 0.054*C
ZH-100	0.804 - 0.001*Tr + 0.017*C	0.758 + 0.018*C
ZL-100	0.299 - 0.002*Tr + 0.048*C	0.271 + 0.054*C
Path TM-IO (for pins A EN LOWEMI TA TEN)		
F-10100	0.440 - 0.001*Tr + 0.048*C	0.421 + 0.002*Tr + 0.053*C
R-10100	1.216 - 0.005*Tr + 0.019*C	1.163 - 0.001*Tr + 0.020*C
F-00110	0.440 + 0.048*C	0.419 + 0.011*Tr + 0.053*C
R-00110	1.216 + 0.019*C	1.163 - 0.002*Tr + 0.020*C
F-10000	0.269 + 0.049*C	0.262 - 0.005*Tr + 0.054*C
R-10000	0.800 + 0.017*C	0.752 + 0.001*Tr + 0.018*C
F-00010	0.270 - 0.005*Tr + 0.049*C	0.260 + 0.001*Tr + 0.054*C
R-00010	0.800 + 0.017*C	0.753 + 0.003*Tr + 0.018*C

Default Leakage Power

Default Leakage Power (mW)	vdd	vdde1v8
best 1.10 125	3.138e-03	4.927e-03
worst 0.90 -40	6.623e-07	5.966e-07

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	0.494 + 0.313*Tr	0.622 + 0.937*Tr	0.243	0.318 + 0.006*Tr
ZI toggling	0.260 + 0.001*Tr	0.263 + 0.006*Tr	0.131	0.131
For vdde1v8				
IO toggling/Output stable	7.515 + 0.036*Tr	9.418 + 0.041*Tr	4.297 - 0.034*Tr	4.905 - 0.036*Tr
ZI toggling	0.337 + 0.258*Tr	0.447 + 0.443*Tr	0.161 + 0.018*Tr	0.242 + 0.082*Tr

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries (”ST”) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS ”AUTOMOTIVE GRADE” MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER’S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com