# sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Library

Cell Groups
INOUTx
INPUT
SG13G2_IOPADIOVDD
SG13G2_IOPADIOVSS
SG13G2_IOPADVDD
SG13G2_IOPADVSS
TRI_OUTx

# **INOUT**x



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

### **Truth Table**

	INPUT		OUTPUT			
c2p	c2p_en	pad	pad	p2c		
-	0	0	-	0		
-	0	1	-	1		
0	1	-	0	0		
1	1	-	1	1		

# **Footprint**

Cell Name	Area
sg13g2_IOPadInOut16mA	14400.00000
sg13g2_IOPadInOut30mA	14400.00000
sg13g2_IOPadInOut4mA	14400.00000
sg13g2_IOPadOut16mA	14400.00000
sg13g2_IOPadOut30mA	14400.00000
sg13g2_IOPadOut4mA	14400.00000

# **Pin Capacitance Information**

Call Name		Pin Cap(pf)		Max Cap(pf)		
Cell Name	c2p	c2p_en	pad	p2c	pad	
sg13g2_IOPadInOut16mA	0.03150	0.02807	0.26032	1.70416	6.47213	
sg13g2_IOPadInOut30mA	0.03150	0.02807	0.34496	1.70082	10.00220	
sg13g2_IOPadInOut4mA	0.03150	0.02807	0.18739	1.70927	1.65137	
sg13g2_IOPadOut16mA	0.04369	0.00000	0.00000	0.00000	6.49658	
sg13g2_IOPadOut30mA	0.04368	0.00000	0.00000	0.00000	9.66853	
sg13g2_IOPadOut4mA	0.04367	0.00000	0.00000	0.00000	1.68968	

# **Leakage Information**

Cell Name		Leakage(pW)	
Cen Name	Min.	Avg	Max.
sg13g2_IOPadInOut16mA	27.44130	18775.30000	22149.80000
sg13g2_IOPadInOut30mA	0.00000	19191.60000	22149.00000
sg13g2_IOPadInOut4mA	7.07672	18341.60000	22150.50000
sg13g2_IOPadOut16mA	282.33200	4801.04000	6376.16000
sg13g2_IOPadOut30mA	524.86900	5427.66000	6376.03000
sg13g2_IOPadOut4mA	184.99300	4370.24000	6376.19000

# **Delay Information** Delay(ns) to p2c rising:

Cell Name	Timing	Delay(ns)									
	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last	
sg13g2_IOPadInOut16mA	pad->p2c (RR)	0.12000	0.02400	0.04943	0.60000	0.14400	0.09209	3.50000	0.24000	0.12374	
sg13g2_IOPadInOut30mA	pad->p2c (RR)	0.12000	0.02400	0.04948	0.60000	0.14400	0.09211	3.50000	0.24000	0.12382	
sg13g2_IOPadInOut4mA	pad->p2c (RR)	0.12000	0.02400	0.04942	0.60000	0.14400	0.09206	3.50000	0.24000	0.12371	

#### Delay(ns) to p2c falling:

Cell Name	Timing	Delay(ns)									
	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last	
sg13g2_IOPadInOut16mA	pad->p2c (FF)	0.12000	0.02400	0.20305	0.60000	0.14400	0.48219	3.50000	0.24000	1.81708	
sg13g2_IOPadInOut30mA	pad->p2c (FF)	0.12000	0.02400	0.20369	0.60000	0.14400	0.48215	3.50000	0.24000	1.81716	
sg13g2_IOPadInOut4mA	pad->p2c (FF)	0.12000	0.02400	0.20305	0.60000	0.14400	0.48236	3.50000	0.24000	1.81512	

#### Delay(ns) to pad rising:

Cell Name	Timing					Delay(ns)				
Cen Name	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
	c2p->pad (RR)	0.02000	1.00000	1.03218	0.33000	4.00000	1.34907	2.50000	10.00000	1.82847
sg13g2_IOPadInOut16mA	c2p_en->pad (FR)	0.02000	1.00000	0.74725	0.33000	4.00000	0.78715	2.50000	10.00000	0.92522
	c2p_en->pad (RR)	0.02000	1.00000	1.02429	0.33000	4.00000	1.36442	2.50000	10.00000	1.88891
sg13g2_IOPadInOut30mA	c2p->pad (RR)	0.02000	1.00000	1.20298	0.33000	4.00000	1.47953	2.50000	10.00000	1.82523
	c2p_en->pad (FR)	0.02000	1.00000	0.90828	0.33000	4.00000	0.94704	2.50000	10.00000	1.08854
	c2p_en->pad (RR)	0.02000	1.00000	1.16890	0.33000	4.00000	1.48497	2.50000	10.00000	1.86835
	c2p->pad (RR)	0.02000	1.00000	1.01629	0.33000	4.00000	1.94151	2.50000	10.00000	3.75393
sg13g2_IOPadInOut4mA	c2p_en->pad (FR)	0.02000	1.00000	0.58942	0.33000	4.00000	0.63054	2.50000	10.00000	0.76992
	c2p_en->pad (RR)	0.02000	1.00000	1.01908	0.33000	4.00000	1.98689	2.50000	10.00000	3.88588
sg13g2_IOPadOut16mA	c2p->pad (RR)	0.02000	1.00000	1.00861	0.33000	9.00000	1.78936	2.50000	15.00000	2.63486
sg13g2_IOPadOut30mA	c2p->pad (RR)	0.02000	2.00000	1.28565	0.33000	18.00000	2.23489	2.50000	30.00000	3.12983
sg13g2_IOPadOut4mA	c2p->pad (RR)	0.02000	1.00000	0.98438	0.33000	4.00000	1.97285	2.50000	10.00000	4.17015

#### Delay(ns) to pad falling:

Cell Name	Timing					Delay(ns)				
Cell Name	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
	c2p->pad (FF)	0.02000	1.00000	0.70436	0.33000	4.00000	1.00215	2.50000	10.00000	1.67449
sg13g2_IOPadInOut16mA	c2p_en->pad (FF)	0.02000	1.00000	0.71486	0.33000	4.00000	0.75924	2.50000	10.00000	0.94284
	c2p_en->pad (RF)	0.02000	1.00000	0.57203	0.33000	4.00000	0.88467	2.50000	10.00000	1.40206
sg13g2_IOPadInOut30mA	c2p->pad (FF)	0.02000	1.00000	0.90888	0.33000	4.00000	1.12984	2.50000	10.00000	1.63080
	c2p_en->pad (FF)	0.02000	1.00000	1.14760	0.33000	4.00000	1.20395	2.50000	10.00000	1.38036
	c2p_en->pad (RF)	0.02000	1.00000	0.60418	0.33000	4.00000	0.84196	2.50000	10.00000	1.16013
	c2p->pad (FF)	0.02000	1.00000	0.73533	0.33000	4.00000	1.70636	2.50000	10.00000	3.79013
sg13g2_IOPadInOut4mA	c2p_en->pad (FF)	0.02000	1.00000	0.34888	0.33000	4.00000	0.40201	2.50000	10.00000	0.58122
	c2p_en->pad (RF)	0.02000	1.00000	0.75026	0.33000	4.00000	1.78869	2.50000	10.00000	3.82421
sg13g2_IOPadOut16mA	c2p->pad (FF)	0.02000	1.00000	0.67051	0.33000	9.00000	1.30408	2.50000	15.00000	1.83952
sg13g2_IOPadOut30mA	c2p->pad (FF)	0.02000	2.00000	0.94041	0.33000	18.00000	1.66293	2.50000	30.00000	2.20906
sg13g2_IOPadOut4mA	c2p->pad (FF)	0.02000	1.00000	0.68611	0.33000	4.00000	1.63007	2.50000	10.00000	3.56209

### **Power Information**

### Internal switching power(pJ) to p2c rising:

Cell Name	T4	Power(pJ)									
Cen Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last	
sg13g2_IOPadInOut16mA	pad	0.12000	0.02400	-0.69273	0.60000	0.14400	-0.69545	3.50000	0.24000	0.14878	
	pad	0.12000	0.02400	0.01094	0.60000	0.14400	0.00873	3.50000	0.24000	0.08271	
221222 IOD24InOv420m A	pad	0.12000	0.02400	-1.31839	0.60000	0.14400	-1.32545	3.50000	0.24000	0.29047	
sg13g2_IOPadInOut30mA	pad	0.12000	0.02400	0.01092	0.60000	0.14400	0.00879	3.50000	0.24000	0.08469	
sg13g2_IOPadInOut4mA	pad	0.12000	0.02400	-0.17313	0.60000	0.14400	-0.17385	3.50000	0.24000	0.03535	
	pad	0.12000	0.02400	0.01095	0.60000	0.14400	0.00920	3.50000	0.24000	0.08471	

#### Internal switching power(pJ) to p2c falling:

Cell Name	Immut	Power(pJ)									
Con Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last	
sg13g2_IOPadInOut16mA	pad	0.12000	0.02400	0.69721	0.60000	0.14400	0.69545	3.50000	0.24000	0.69402	
	pad	0.12000	0.02400	0.10227	0.60000	0.14400	0.09365	3.50000	0.24000	0.12349	
221222 IODodIn Out20m A	pad	0.12000	0.02400	1.32603	0.60000	0.14400	1.32545	3.50000	0.24000	1.32205	
sg13g2_IOPadInOut30mA	pad	0.12000	0.02400	0.10255	0.60000	0.14400	0.09423	3.50000	0.24000	0.12338	
12 2 IOD II O 14 A	pad	0.12000	0.02400	0.17417	0.60000	0.14400	0.17385	3.50000	0.24000	0.17356	
sg13g2_IOPadInOut4mA	pad	0.12000	0.02400	0.10228	0.60000	0.14400	0.09365	3.50000	0.24000	0.11328	

#### Internal switching power(pJ) to pad rising:

G H.V.	<b>T</b> .					Power(pJ)	ı			
Cell Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
	c2p	0.02000	1.00000	7.96958	0.33000	4.00000	7.76380	2.50000	10.00000	7.46111
	c2p	0.02000	1.00000	2.78764	0.33000	4.00000	10.89660	2.50000	10.00000	26.79270
sg13g2_IOPadInOut16mA	c2p_en	0.02000	1.00000	7.47006	0.33000	4.00000	8.36003	2.50000	10.00000	10.09560
	c2p_en	0.02000	1.00000	2.73279	0.33000	4.00000	10.85760	2.50000	10.00000	26.79130
	c2p	0.02000	1.00000	13.36440	0.33000	4.00000	12.62730	2.50000	10.00000	12.00280
12.2 100 11.0 120 1	c2p	0.02000	1.00000	2.78450	0.33000	4.00000	10.92300	2.50000	10.00000	22.94070
sg13g2_IOPadInOut30mA	c2p_en	0.02000	1.00000	11.37870	0.33000	4.00000	12.29090	2.50000	10.00000	13.99550
	c2p_en	0.02000	1.00000	2.73295	0.33000	4.00000	10.89880	2.50000	10.00000	22.83250
	c2p	0.02000	1.00000	4.26685	0.33000	4.00000	4.14054	2.50000	10.00000	3.86064
12.4 YOR W. O. 44. A	c2p	0.02000	1.00000	2.79539	0.33000	4.00000	10.98200	2.50000	10.00000	27.98750
sg13g2_IOPadInOut4mA	c2p_en	0.02000	1.00000	4.05897	0.33000	4.00000	4.72637	2.50000	10.00000	5.94893
	c2p_en	0.02000	1.00000	2.74067	0.33000	4.00000	10.94510	2.50000	10.00000	27.95730
12.4 IOD-10.445	c2p	0.02000	1.00000	7.73342	0.33000	9.00000	7.40696	2.50000	15.00000	7.38454
sg13g2_IOPadOut16mA	c2p	0.02000	1.00000	-0.02320	0.33000	9.00000	0.06608	2.50000	15.00000	0.80790
12-2 IOD-10-429-4	c2p	0.02000	2.00000	12.85740	0.33000	18.00000	11.81240	2.50000	30.00000	11.68850
sg13g2_IOPadOut30mA	c2p	0.02000	2.00000	-0.02323	0.33000	18.00000	0.06591	2.50000	30.00000	0.80855
12.4 YOR 10.44	c2p	0.02000	1.00000	3.83833	0.33000	4.00000	3.76132	2.50000	10.00000	3.80650
sg13g2_IOPadOut4mA	c2p	0.02000	1.00000	-0.02324	0.33000	4.00000	0.06591	2.50000	10.00000	0.81201

### Internal switching power(pJ) to pad falling:

						Power(pJ)	)			
Cell Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
	c2p	0.02000	1.00000	18.47980	0.33000	4.00000	14.16730	2.50000	10.00000	10.10760
and 2nd IODs dla Octation A	c2p	0.02000	1.00000	0.33027	0.33000	4.00000	0.40817	2.50000	10.00000	1.17397
sg13g2_IOPadInOut16mA	c2p_en	0.02000	1.00000	2.92914	0.33000	4.00000	2.92408	2.50000	10.00000	2.91766
	c2p_en	0.02000	1.00000	0.16606	0.33000	4.00000	0.21275	2.50000	10.00000	0.63906
	c2p	0.02000	1.00000	72.86300	0.33000	4.00000	62.83180	2.50000	10.00000	47.38640
	c2p	0.02000	1.00000	0.33122	0.33000	4.00000	0.40826	2.50000	10.00000	1.17055
sg13g2_IOPadInOut30mA	c2p_en	0.02000	1.00000	4.92533	0.33000	4.00000	4.92695	2.50000	10.00000	4.92148
	c2p_en	0.02000	1.00000	0.16548	0.33000	4.00000	0.21179	2.50000	10.00000	0.63016
	c2p	0.02000	1.00000	2.14328	0.33000	4.00000	2.11204	2.50000	10.00000	2.11609
	c2p	0.02000	1.00000	0.33079	0.33000	4.00000	0.41454	2.50000	10.00000	1.19324
sg13g2_IOPadInOut4mA	c2p_en	0.02000	1.00000	1.20846	0.33000	4.00000	1.20721	2.50000	10.00000	1.20713
	c2p_en	0.02000	1.00000	0.16676	0.33000	4.00000	0.21899	2.50000	10.00000	0.66031
12-2 IOD-10 4161	c2p	0.02000	1.00000	19.89700	0.33000	9.00000	11.73880	2.50000	15.00000	10.02920
sg13g2_IOPadOut16mA	c2p	0.02000	1.00000	0.11146	0.33000	9.00000	0.20856	2.50000	15.00000	0.95012
12-2 IOD-10-420 4	c2p	0.02000	2.00000	71.51190	0.33000	18.00000	42.51740	2.50000	30.00000	34.86840
sg13g2_IOPadOut30mA	c2p	0.02000	2.00000	0.11148	0.33000	18.00000	0.20865	2.50000	30.00000	0.94993
12.4 IOD. 10	c2p	0.02000	1.00000	2.31467	0.33000	4.00000	2.19251	2.50000	10.00000	2.21476
sg13g2_IOPadOut4mA	c2p	0.02000	1.00000	0.11153	0.33000	4.00000	0.20862	2.50000	10.00000	0.95300

### Passive power(pJ) for c2p rising :

Call Name	Power(pJ)							
Cell Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last		
12-2 IOD- II- O416 A	0.02000	-0.00001	0.33000	0.00000	2.50000	0.00000		
sg13g2_IOPadInOut16mA	0.02000	-0.03459	0.33000	-0.03657	2.50000	-0.03683		
12 2 100 11 0 420	0.02000	-0.00001	0.33000	0.00000	2.50000	0.00000		
sg13g2_IOPadInOut30mA	0.02000	-0.03459	0.33000	-0.03657	2.50000	-0.03683		
12 4 IOD II O 44 A	0.02000	-0.00002	0.33000	0.00000	2.50000	0.00000		
sg13g2_IOPadInOut4mA	0.02000	-0.03459	0.33000	-0.03657	2.50000	-0.03683		

#### Passive power(pJ) for c2p falling:

Call Name	Power(pJ)							
Cell Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last		
12-2 IOD- II- O41( A	0.02000	0.00001	0.33000	0.00000	2.50000	0.00000		
sg13g2_IOPadInOut16mA	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406		
12.2 100 11.0 (20. 1	0.02000	0.00001	0.33000	0.00000	2.50000	0.00000		
sg13g2_IOPadInOut30mA	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406		
12 4 IOD II O 44 A	0.02000	0.00002	0.33000	0.00000	2.50000	0.00000		
sg13g2_IOPadInOut4mA	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406		

Passive power(pJ) for c2p rising (conditional):

G WAY	****	Power(pJ)							
Cell Name	When	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last		
	(!c2p_en * pad * p2c)	0.02000	-0.00001	0.33000	0.00000	2.50000	0.00000		
cg12g2_IOPodInOut16mA	(!c2p_en * pad * p2c)	0.02000	-0.03459	0.33000	-0.03658	2.50000	-0.03683		
sg13g2_IOPadInOut16mA	(!c2p_en * !pad * !p2c)	0.02000	-0.00001	0.33000	0.00000	2.50000	0.00000		
	(!c2p_en * !pad * !p2c)	0.02000	-0.03459	0.33000	-0.03657	2.50000	-0.03683		
	(!c2p_en * pad * p2c)	0.02000	-0.00001	0.33000	0.00000	2.50000	0.00000		
cal 2 a 2 I O Do d I n O ut 20 m A	(!c2p_en * pad * p2c)	0.02000	-0.03459	0.33000	-0.03658	2.50000	-0.03683		
sg13g2_IOPadInOut30mA	(!c2p_en * !pad * !p2c)	0.02000	-0.00001	0.33000	0.00000	2.50000	0.00000		
	(!c2p_en * !pad * !p2c)	0.02000	-0.03459	0.33000	-0.03657	2.50000	-0.03683		
	(!c2p_en * pad * p2c)	0.02000	-0.00002	0.33000	0.00000	2.50000	0.00000		
12.2 IOD- II. O	(!c2p_en * pad * p2c)	0.02000	-0.03459	0.33000	-0.03658	2.50000	-0.03683		
sg13g2_IOPadInOut4mA	(!c2p_en * !pad * !p2c)	0.02000	-0.00002	0.33000	0.00000	2.50000	0.00000		
	(!c2p_en * !pad * !p2c)	0.02000	-0.03459	0.33000	-0.03657	2.50000	-0.03683		

Passive power(pJ) for c2p falling (conditional):

C II N	**/1			Powe	r(pJ)		
Cell Name	When	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last
	(!c2p_en * pad * p2c)	0.02000	0.00001	0.33000	0.00000	2.50000	0.00000
12 A 10D H O 414 A	(!c2p_en * pad * p2c)	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406
sg13g2_IOPadInOut16mA	(!c2p_en * !pad * !p2c)	0.02000	0.00001	0.33000	0.00000	2.50000	0.00000
	(!c2p_en * !pad * !p2c)	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406
	(!c2p_en * pad * p2c)	0.02000	0.00001	0.33000	0.00000	2.50000	0.00000
ag12g2 IODadInOv420v. A	(!c2p_en * pad * p2c)	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406
sg13g2_IOPadInOut30mA	(!c2p_en * !pad * !p2c)	0.02000	0.00001	0.33000	0.00000	2.50000	0.00000
	(!c2p_en * !pad * !p2c)	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406
	(!c2p_en * pad * p2c)	0.02000	0.00002	0.33000	0.00000	2.50000	0.00000
001202 IODoJI- O-44- 4	(!c2p_en * pad * p2c)	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406
sg13g2_IOPadInOut4mA	(!c2p_en * !pad * !p2c)	0.02000	0.00002	0.33000	0.00000	2.50000	0.00000
	(!c2p_en * !pad * !p2c)	0.02000	0.04501	0.33000	0.04410	2.50000	0.04406

Passive power(pJ) for c2p\_en rising:

Call Name	Power(pJ)							
Cell Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last		
12-2 IOD- H O416 A	0.02000	2.01075	0.33000	2.01329	2.50000	2.01015		
sg13g2_IOPadInOut16mA	0.02000	0.06522	0.33000	0.11110	2.50000	0.55277		
12 4 100 11 0 120 1	0.02000	3.22292	0.33000	3.21956	2.50000	3.22677		
sg13g2_IOPadInOut30mA	0.02000	0.06522	0.33000	0.11109	2.50000	0.55341		
12.4 IOD W 0.44	0.02000	0.97972	0.33000	0.98027	2.50000	0.98147		
sg13g2_IOPadInOut4mA	0.02000	0.06523	0.33000	0.11107	2.50000	0.55250		

#### Passive power(pJ) for c2p\_en falling:

Call Name	Power(pJ)								
Cell Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last			
12-2 IOD- II- O416 A	0.02000	0.34811	0.33000	0.34366	2.50000	0.34017			
sg13g2_IOPadInOut16mA	0.02000	0.16025	0.33000	0.21280	2.50000	0.65160			
12 2 100 11 0 420 4	0.02000	0.33083	0.33000	0.32596	2.50000	0.32429			
sg13g2_IOPadInOut30mA	0.02000	0.16026	0.33000	0.21281	2.50000	0.65193			
12 2 IOD II O 44 A	0.02000	0.38397	0.33000	0.37877	2.50000	0.37597			
sg13g2_IOPadInOut4mA	0.02000	0.16024	0.33000	0.21278	2.50000	0.65174			

Passive power(pJ) for pad rising :

Cell Name			Powe	er(pJ)		
Cen Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last
	0.02000	7.96958	0.33000	7.76380	2.50000	7.46111
and 2nd IODs discount (on A	0.02000	2.78764	0.33000	10.89660	2.50000	26.79270
sg13g2_IOPadInOut16mA	0.02000	7.47006	0.33000	8.36003	2.50000	10.09560
	0.02000	2.73279	0.33000	10.85760	2.50000	26.79130
	0.02000	13.36440	0.33000	12.62730	2.50000	12.00280
001202 IOD0 dIn On420m A	0.02000	2.78450	0.33000	10.92300	2.50000	22.94070
sg13g2_IOPadInOut30mA	0.02000	11.37870	0.33000	12.29090	2.50000	13.99550
	0.02000	2.73295	0.33000	10.89880	2.50000	22.83250
	0.02000	4.26685	0.33000	4.14054	2.50000	3.86064
sal2a2 IODadInOut4mA	0.02000	2.79539	0.33000	10.98200	2.50000	27.98750
sg13g2_IOPadInOut4mA	0.02000	4.05897	0.33000	4.72637	2.50000	5.94893
	0.02000	2.74067	0.33000	10.94510	2.50000	27.95730
sg13g2_IOPadOut16mA	0.02000	7.73342	0.33000	7.40696	2.50000	7.38454
sg15g2_1OPadOut10IIIA	0.02000	-0.02320	0.33000	0.06608	2.50000	0.80790
sg13g2_IOPadOut30mA	0.02000	12.85740	0.33000	11.81240	2.50000	11.68850
sg13g2_1OF auOut3viffA	0.02000	-0.02323	0.33000	0.06591	2.50000	0.80855
cal2a2_IODodOut4mA	0.02000	3.83833	0.33000	3.76132	2.50000	3.80650
sg13g2_IOPadOut4mA	0.02000	-0.02324	0.33000	0.06591	2.50000	0.81201

Passive power(pJ) for pad falling:

Cell Name			Powe	er(pJ)		
Cen Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last
	0.02000	18.47980	0.33000	14.16730	2.50000	10.10760
and 2nd IODs discount (on A	0.02000	0.33027	0.33000	0.40817	2.50000	1.17397
sg13g2_IOPadInOut16mA	0.02000	2.92914	0.33000	2.92408	2.50000	2.91766
	0.02000	0.16606	0.33000	0.21275	2.50000	0.63906
	0.02000	72.86300	0.33000	62.83180	2.50000	47.38640
001202 IOD0 dIn On420m A	0.02000	0.33122	0.33000	0.40826	2.50000	1.17055
sg13g2_IOPadInOut30mA	0.02000	4.92533	0.33000	4.92695	2.50000	4.92148
	0.02000	0.16548	0.33000	0.21179	2.50000	0.63016
	0.02000	2.14328	0.33000	2.11204	2.50000	2.11609
12-2 IOD- HO44 A	0.02000	0.33079	0.33000	0.41454	2.50000	1.19324
sg13g2_IOPadInOut4mA	0.02000	1.20846	0.33000	1.20721	2.50000	1.20713
	0.02000	0.16676	0.33000	0.21899	2.50000	0.66031
sol2o2 IODodOut16mA	0.02000	19.89700	0.33000	11.73880	2.50000	10.02920
sg13g2_IOPadOut16mA	0.02000	0.11146	0.33000	0.20856	2.50000	0.95012
ss12s2_IODsdOut20 A	0.02000	71.51190	0.33000	42.51740	2.50000	34.86840
sg13g2_IOPadOut30mA	0.02000	0.11148	0.33000	0.20865	2.50000	0.94993
callad IODodOwtA A	0.02000	2.31467	0.33000	2.19251	2.50000	2.21476
sg13g2_IOPadOut4mA	0.02000	0.11153	0.33000	0.20862	2.50000	0.95300

# **INPUT**



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

### **Truth Table**

INPUT	OUTPUT
pad	p2c
0	0
1	1

## **Footprint**

Cell Name	Area
sg13g2_IOPadIn	14400.00000

# **Pin Capacitance Information**

Call Name	Pin Cap(pf)	Max Cap(pf)
Cell Name	pad	p2c
sg13g2_IOPadIn	0.22066	1.71416

# **Leakage Information**

Call Name	Leakage(pW)					
Cell Name	Min.	Avg	Max.			
sg13g2_IOPadIn	0.00000	2057.45000	3192.46000			

# **Delay Information** Delay(ns) to p2c rising:

Cell Name	Timing					Delay(ns)				
Cen Name	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
sg13g2_IOPadIn	pad->p2c (RR)	0.12000	0.02400	0.04930	0.60000	0.14400	0.09195	3.50000	0.24000	0.12357

#### Delay(ns) to p2c falling:

Cell Name	Timing					Delay(ns)				
Cen Name	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
sg13g2_IOPadIn	pad->p2c (FF)	0.12000	0.02400	0.20285	0.60000	0.14400	0.47996	3.50000	0.24000	1.81577

### **Power Information**

### Internal switching power(pJ) to p2c rising:

Call Name	T4					Power(pJ)				
Cell Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
12-2 IOD-II-	pad	0.12000	0.02400	0.00000	0.60000	0.14400	0.00000	3.50000	0.24000	0.00000
sg13g2_IOPadIn	pad	0.12000	0.02400	0.01038	0.60000	0.14400	0.00881	3.50000	0.24000	0.08424

#### Internal switching power(pJ) to p2c falling:

Call Name	T4					Power(pJ)				
Cell Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
201202 IODadIa	pad	0.12000	0.02400	-0.00000	0.60000	0.14400	-0.00000	3.50000	0.24000	-0.00000
sg13g2_IOPadIn	pad	0.12000	0.02400	0.10214	0.60000	0.14400	0.09496	3.50000	0.24000	0.11465

# SG13G2\_IOPADIOVDD



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

## **Footprint**

Cell Name	Area		
sg13g2_IOPadIOVdd	14400.00000		

Call Name	Leakage(pW)				
Cell Name	Min.	Avg	Max.		
sg13g2_IOPadIOVdd	0.00000	7677.59000	7677.59000		

# SG13G2\_IOPADIOVSS



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

### **Footprint**

Cell Name	Area
sg13g2_IOPadIOVss	14400.00000

Call Name	Leakage(pW)					
Cell Name	Min.	Avg	Max.			
sg13g2_IOPadIOVss	0.00000	2.86405	2.86405			

# SG13G2\_IOPADVDD



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

## **Footprint**

Cell Name	Area
sg13g2_IOPadVdd	14400.00000

Call Name	Leakage(pW)					
Cell Name	Min.	Avg	Max.			
sg13g2_IOPadVdd	0.00000	0.00000	0.00000			

# SG13G2\_IOPADVSS



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

### **Footprint**

Cell Name	Area		
sg13g2_IOPadVss	14400.00000		

Call Name	Leakage(pW)					
Cell Name	Min.	Max.				
sg13g2_IOPadVss	0.00000	1.80055	1.80055			

# TRI\_OUTx



sg13g2\_io\_fast\_1p65V\_3p6V\_m40C Cell Library: Process sg13g2\_io\_fast\_1p65V\_3p6V\_m40C, Voltage 1.65, Temp -40.00

### **Truth Table**

IN	NPUT	OUTPUT			
c2p	c2p_en	pad			
-	0	HiZ			
0	1	0			
1	1	1			

## **Footprint**

Cell Name	Area
sg13g2_IOPadTriOut16mA	14400.00000
sg13g2_IOPadTriOut30mA	14400.00000
sg13g2_IOPadTriOut4mA	14400.00000

# **Pin Capacitance Information**

Cell Name	Pin C	ap(pf)	Max Cap(pf)		
Cen Name	c2p	c2p_en	pad		
sg13g2_IOPadTriOut16mA	0.03114	0.02890	6.49315		
sg13g2_IOPadTriOut30mA	0.03114	0.02890	10.04960		
sg13g2_IOPadTriOut4mA	0.03114	0.02889	1.68930		

# **Leakage Information**

C.II V	Leakage(pW)						
Cell Name	Min.	Avg	Max.				
sg13g2_IOPadTriOut16mA	224.19900	16570.20000	19894.50000				
sg13g2_IOPadTriOut30mA	349.68200	16925.10000	19895.10000				
sg13g2_IOPadTriOut4mA	37.18440	16198.90000	19894.90000				

# **Delay Information** Delay(ns) to pad rising:

CHN	Timing					Delay(ns)				
Cell Name	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
sg13g2_IOPadTriOut16mA	c2p->pad (RR)	0.02000	1.00000	1.04212	0.33000	4.00000	1.36184	2.50000	10.00000	1.84328
	c2p_en->pad (FR)	0.02000	1.00000	0.75980	0.33000	4.00000	0.80232	2.50000	10.00000	0.93939
	c2p_en->pad (RR)	0.02000	1.00000	1.03218	0.33000	4.00000	1.37925	2.50000	10.00000	1.90371
	c2p->pad (RR)	0.02000	1.00000	1.21488	0.33000	4.00000	1.49434	2.50000	10.00000	1.84395
sg13g2_IOPadTriOut30mA	c2p_en->pad (FR)	0.02000	1.00000	0.92222	0.33000	4.00000	0.96271	2.50000	10.00000	1.10380
	c2p_en->pad (RR)	0.02000	1.00000	1.17694	0.33000	4.00000	1.49879	2.50000	10.00000	1.88546
	c2p->pad (RR)	0.02000	1.00000	1.01868	0.33000	4.00000	1.94488	2.50000	10.00000	3.75736
sg13g2_IOPadTriOut4mA	c2p_en->pad (FR)	0.02000	1.00000	0.60501	0.33000	4.00000	0.64523	2.50000	10.00000	0.78350
	c2p_en->pad (RR)	0.02000	1.00000	1.02112	0.33000	4.00000	1.99234	2.50000	10.00000	3.89879

#### Delay(ns) to pad falling:

CHN	Timing					Delay(ns)				
Cell Name	Arc(Dir)	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
sg13g2_IOPadTriOut16mA	c2p->pad (FF)	0.02000	1.00000	0.71343	0.33000	4.00000	1.01207	2.50000	10.00000	1.68230
	c2p_en->pad (FF)	0.02000	1.00000	0.72561	0.33000	4.00000	0.77975	2.50000	10.00000	0.95442
	c2p_en->pad (RF)	0.02000	1.00000	0.57796	0.33000	4.00000	0.89279	2.50000	10.00000	1.41421
	c2p->pad (FF)	0.02000	1.00000	0.92077	0.33000	4.00000	1.14271	2.50000	10.00000	1.64288
sg13g2_IOPadTriOut30mA	c2p_en->pad (FF)	0.02000	1.00000	1.16216	0.33000	4.00000	1.21181	2.50000	10.00000	1.39363
	c2p_en->pad (RF)	0.02000	1.00000	0.61085	0.33000	4.00000	0.85091	2.50000	10.00000	1.17016
	c2p->pad (FF)	0.02000	1.00000	0.73575	0.33000	4.00000	1.70597	2.50000	10.00000	3.78870
sg13g2_IOPadTriOut4mA	c2p_en->pad (FF)	0.02000	1.00000	0.35705	0.33000	4.00000	0.41107	2.50000	10.00000	0.59013
	c2p_en->pad (RF)	0.02000	1.00000	0.75064	0.33000	4.00000	1.79201	2.50000	10.00000	3.83330

### **Power Information**

#### Internal switching power(pJ) to pad rising:

Call Name	I4					Power(pJ)	1			
Cell Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
	c2p	0.02000	1.00000	7.66479	0.33000	4.00000	7.46989	2.50000	10.00000	7.26635
sg13g2_IOPadTriOut16mA	c2p	0.02000	1.00000	0.09401	0.33000	4.00000	0.16716	2.50000	10.00000	0.94417
	c2p_en	0.02000	1.00000	7.09714	0.33000	4.00000	8.23543	2.50000	10.00000	9.95796
	c2p_en	0.02000	1.00000	0.03964	0.33000	4.00000	0.12715	2.50000	10.00000	0.91079
	c2p	0.02000	1.00000	13.12700	0.33000	4.00000	12.49260	2.50000	10.00000	11.73840
12-2 IOD-JT	c2p	0.02000	1.00000	0.09400	0.33000	4.00000	0.16716	2.50000	10.00000	0.94461
sg13g2_IOPadTriOut30mA	c2p_en	0.02000	1.00000	11.01200	0.33000	4.00000	12.11740	2.50000	10.00000	13.85610
	c2p_en	0.02000	1.00000	0.03962	0.33000	4.00000	0.12713	2.50000	10.00000	0.90956
	c2p	0.02000	1.00000	3.82991	0.33000	4.00000	3.70732	2.50000	10.00000	3.46864
12-2 IOD-JTO44 A	c2p	0.02000	1.00000	0.09405	0.33000	4.00000	0.16720	2.50000	10.00000	0.94268
sg13g2_IOPadTriOut4mA	c2p_en	0.02000	1.00000	3.63393	0.33000	4.00000	4.33001	2.50000	10.00000	5.70751
	c2p_en	0.02000	1.00000	0.03969	0.33000	4.00000	0.12718	2.50000	10.00000	0.92104

#### Internal switching power(pJ) to pad falling:

Call Name	T 4					Power(pJ)				
Cell Name	Input	Slew(ns)	Load(pf)	First	Slew(ns)	Load(pf)	Mid	Slew(ns)	Load(pf)	Last
	c2p	0.02000	1.00000	18.69120	0.33000	4.00000	14.35710	2.50000	10.00000	10.27190
callad IODodTriOut16mA	c2p	0.02000	1.00000	0.23902	0.33000	4.00000	0.31762	2.50000	10.00000	1.08122
sg13g2_IOPadTriOut16mA	c2p_en	0.02000	1.00000	2.98171	0.33000	4.00000	2.98509	2.50000	10.00000	2.97984
	c2p_en	0.02000	1.00000	0.07148	0.33000	4.00000	0.11859	2.50000	10.00000	0.54487
	c2p	0.02000	1.00000	73.13690	0.33000	4.00000	63.09510	2.50000	10.00000	47.67670
12-2 IOD- JTO420 A	c2p	0.02000	1.00000	0.23888	0.33000	4.00000	0.31758	2.50000	10.00000	1.08129
sg13g2_IOPadTriOut30mA	c2p_en	0.02000	1.00000	4.98095	0.33000	4.00000	4.98760	2.50000	10.00000	4.98929
	c2p_en	0.02000	1.00000	0.07142	0.33000	4.00000	0.11853	2.50000	10.00000	0.54411
	c2p	0.02000	1.00000	2.24806	0.33000	4.00000	2.21460	2.50000	10.00000	2.21555
sal2a2 IODodTwiOv44 A	c2p	0.02000	1.00000	0.23915	0.33000	4.00000	0.31788	2.50000	10.00000	1.08155
sg13g2_IOPadTriOut4mA	c2p_en	0.02000	1.00000	1.26066	0.33000	4.00000	1.25877	2.50000	10.00000	1.25865
	c2p_en	0.02000	1.00000	0.07174	0.33000	4.00000	0.11884	2.50000	10.00000	0.55053

#### Passive power(pJ) for c2p rising:

Call Name	Power(pJ)								
Cell Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last			
12-2 IOD- JT-2041( A	0.02000	0.00005	0.33000	0.00008	2.50000	0.00009			
sg13g2_IOPadTriOut16mA	0.02000	-0.03476	0.33000	-0.03658	2.50000	-0.03696			
12 2 IOD IT 10 (20 A	0.02000	0.00017	0.33000	0.00020	2.50000	0.00021			
sg13g2_IOPadTriOut30mA	0.02000	-0.03476	0.33000	-0.03658	2.50000	-0.03696			
sg13g2_IOPadTriOut4mA	0.02000	0.00000	0.33000	0.00000	2.50000	0.00001			
	0.02000	-0.03476	0.33000	-0.03658	2.50000	-0.03696			

#### Passive power(pJ) for c2p falling:

Cell Name	Power(pJ)								
Cell Name	Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last			
sg13g2_IOPadTriOut16mA	0.02000	-0.00005	0.33000	-0.00008	2.50000	-0.00009			
	0.02000	0.04301	0.33000	0.04207	2.50000	0.04189			
12 A 10D IT 10 (20 A	0.02000	-0.00004	0.33000	-0.00006	2.50000	-0.00006			
sg13g2_IOPadTriOut30mA	0.02000	0.04302	0.33000	0.04218	2.50000	0.04219			
sg13g2_IOPadTriOut4mA	0.02000	0.00000	0.33000	0.00000	2.50000	-0.00001			
	0.02000	0.04301	0.33000	0.04204	2.50000	0.04228			

#### Passive power(pJ) for c2p rising (conditional):

CHN	***	Power(pJ)							
Cell Name	When	Slew(ns)	First	Slew(ns)	Mid	2.50000	Last		
sg13g2_IOPadTriOut16mA	!c2p_en	0.02000	0.00005	0.33000	0.00008	2.50000	0.00009		
	!c2p_en	0.02000	-0.03476	0.33000	-0.03658	2.50000	-0.03696		
12-2 IOD- JT-'O-420 A	!c2p_en	0.02000	0.00017	0.33000	0.00020	2.50000	0.00021		
sg13g2_IOPadTriOut30mA	!c2p_en	0.02000	-0.03476	0.33000	-0.03658	2.50000	-0.03696		
12.4 TOD 17.10 (4.4	!c2p_en	0.02000	0.00000	0.33000	0.00000	2.50000	0.00001		
sg13g2_IOPadTriOut4mA	!c2p_en	0.02000	-0.03476	0.33000	-0.03658	2.50000	-0.03696		

### Passive power(pJ) for c2p falling (conditional):

Cell Name	When	Power(pJ)					
		Slew(ns)	First	Slew(ns)	Mid	Slew(ns)	Last
sg13g2_IOPadTriOut16mA	!c2p_en	0.02000	-0.00005	0.33000	-0.00008	2.50000	-0.00009
	!c2p_en	0.02000	0.04301	0.33000	0.04207	2.50000	0.04189
sg13g2_IOPadTriOut30mA	!c2p_en	0.02000	-0.00004	0.33000	-0.00006	2.50000	-0.00006
	!c2p_en	0.02000	0.04302	0.33000	0.04218	2.50000	0.04219
sg13g2_IOPadTriOut4mA	!c2p_en	0.02000	0.00000	0.33000	0.00000	2.50000	-0.00001
	!c2p_en	0.02000	0.04301	0.33000	0.04204	2.50000	0.04228