sky130_osu_sc_12T_hs_TT_1P8_25C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_HS__ADDFx
SKY130_OSU_SC_12T_HS__ADDHx
SKY130_OSU_SC_12T_HS__AND2x
SKY130_OSU_SC_12T_HS__AOI21
SKY130_OSU_SC_12T_HS__AOI22
SKY130_OSU_SC_12T_HS__BUFx
SKY130_OSU_SC_12T_HS__DFFRx
SKY130_OSU_SC_12T_HS__DFFSRx
SKY130_OSU_SC_12T_HS__DFFSx
SKY130_OSU_SC_12T_HS__DFFx
SKY130_OSU_SC_12T_HS__INVx
SKY130_OSU_SC_12T_HS__MUX2
SKY130_OSU_SC_12T_HS__NAND2x
SKY130_OSU_SC_12T_HS__NOR2x
SKY130_OSU_SC_12T_HS__OAI21
SKY130_OSU_SC_12T_HS__OAI22
SKY130_OSU_SC_12T_HS__OR2x
SKY130_OSU_SC_12T_HS__TBUFIx
SKY130_OSU_SC_12T_HS__TNBUFIx
SKY130_OSU_SC_12T_HS__XNOR2
SKY130_OSU_SC_12T_HS__XOR2
SKY130_OSU_SC_12T_HS_x

SKY130_OSU_SC_12T_HS__ADDFx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT			OUTPUT		
A	**B**	**CI**	**CO**	**CON**	**S**
0	**0**	**0**	**0**	**1**	**0**
0	**0**	**1**	**0**	**1**	**1**
0	**1**	**0**	**0**	**1**	**1**
0	**1**	**1**	**1**	**0**	**0**
1	**0**	**0**	**0**	**1**	**1**
1	**0**	**1**	**1**	**0**	**0**
1	**1**	**0**	**1**	**0**	**0**
1	**1**	**1**	**1**	**0**	**1**

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addf_1	31.25760
sky130_osu_sc_12T_hs__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	**B**	**CI**	**CO**	**CON**	**S**
sky130_osu_sc_12T_hs__addf_1	0.01100	0.01103	0.00851	1.32107	0.58127	1.16653
sky130_osu_sc_12T_hs__addf_l	0.01100	0.01103	0.00853	0.89775	0.58268	1.16562

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.07365	0.09064
sky130_osu_sc_12T_hs__addf_l	0.00000	0.28124	0.50808

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (RR)	0.12130	1.42559	21.69090
	B->CO (RR)	0.11735	1.40585	21.46830
	CI->CO (RR)	0.11405	1.46709	22.52410
	CON->CO (FR)	0.02270	0.68266	11.10460
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.12094	1.31415	17.37910
	B->CO (RR)	0.11724	1.30779	17.50360
	CI->CO (RR)	0.11374	1.35615	18.23900
	CON->CO (FR)	0.02686	0.72607	10.68890

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (FF)	0.19007	1.95059	29.28110
	B->CO (FF)	0.16847	1.86231	28.11160
	CI->CO (FF)	0.16602	1.94038	29.62790
	CON->CO (RF)	0.01720	0.46949	7.64482
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.18613	1.72277	22.47250
	B->CO (FF)	0.16508	1.64917	21.67590
	CI->CO (FF)	0.16215	1.71350	22.84250
	CON->CO (RF)	0.01846	0.47703	7.08988

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (FR)	0.15876	0.92662	10.39790
	B->CON (FR)	0.13561	0.85965	10.11210
	CI->CON (FR)	0.13477	0.91664	10.81090
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.15063	0.91735	10.40650
	B->CON (FR)	0.12839	0.85350	10.11970
	CI->CON (FR)	0.12660	0.90992	10.81930

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (RF)	0.07369	0.46337	5.20403
	B->CON (RF)	0.07103	0.49013	5.71946
	CI->CON (RF)	0.06647	0.50702	6.04461
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.07150	0.46148	5.21024
	B->CON (RF)	0.06895	0.48926	5.72579
	CI->CON (RF)	0.06427	0.50521	6.05136

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-R)	0.27769	1.80937	23.30780
	B->S (-R)	0.27941	1.78740	22.58820
	CI->S (-R)	0.25150	1.79538	23.65950
	CON->S (RR)	0.07078	0.58271	6.62227
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.26772	1.80123	23.28830
	B->S (-R)	0.26956	1.77984	22.56710
	CI->S (-R)	0.24158	1.78719	23.63780
	CON->S (RR)	0.07081	0.58249	6.61666

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-F)	0.20733	1.19677	14.14640
	B->S (-F)	0.20328	1.16609	14.17040
	CI->S (-F)	0.19973	1.23553	14.98900
	CON->S (FF)	0.08936	0.56508	5.84971
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.20257	1.19310	14.13420
	B->S (-F)	0.19884	1.16279	14.15970
	CI->S (-F)	0.19496	1.23155	14.97630
	CON->S (FF)	0.08939	0.56492	5.84634

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00242	0.00291	0.01418
	B	0.00352	0.00386	0.01359
	CI	0.00354	0.00413	0.01534
sky130_osu_sc_12T_hs__addf_l	A	0.00216	0.00256	0.01132
	B	0.00250	0.00290	0.01078
	CI	0.00328	0.00379	0.01262

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00888	0.01004	0.03573
	B	0.00926	0.01025	0.03307
	CI	0.00752	0.00878	0.03508
sky130_osu_sc_12T_hs__addf_l	A	0.00867	0.00944	0.02628
	B	0.00904	0.00971	0.02451
	CI	0.00730	0.00819	0.02567

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00886	0.00945	0.02123
	B	0.00920	0.00965	0.02019
	CI	0.00752	0.00818	0.02090
sky130_osu_sc_12T_hs__addf_l	A	0.00865	0.00913	0.02048
	B	0.00897	0.00938	0.01952
	CI	0.00729	0.00792	0.02015

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00287	0.00292	0.00854
	B	0.00274	0.00300	0.00876
	CI	0.00353	0.00392	0.01076
sky130_osu_sc_12T_hs__addf_l	A	0.00261	0.00262	0.00850
	B	0.00248	0.00275	0.00874
	CI	0.00327	0.00366	0.01077

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00888	0.00993	0.03264
	B	0.00926	0.01016	0.03026
	CI	0.00752	0.00868	0.03205
sky130_osu_sc_12T_hs__addf_l	A	0.00867	0.00963	0.03130
	B	0.00904	0.00987	0.02904
	CI	0.00730	0.00838	0.03069

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01927	0.01929	0.03826
	B	0.01757	0.01771	0.04015
	CI	0.01585	0.01570	0.03296
sky130_osu_sc_12T_hs__addf_l	A	0.01928	0.01928	0.03826
	B	0.01760	0.01772	0.04015
	CI	0.01586	0.01571	0.03297

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	0	0
0	1	0	0	1
1	0	0	0	1
1	1	1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addh_1	18.55920
sky130_osu_sc_12T_hs__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_hs__addh_1	0.00549	0.00579	1.26363	1.30539	1.32214
sky130_osu_sc_12T_hs__addh_l	0.00536	0.00570	0.88671	1.30702	0.91818

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.07459	0.07927
sky130_osu_sc_12T_hs__addh_l	0.00000	0.49741	0.50215

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (RR)	0.09729	0.64527	7.07460
	B->CO (RR)	0.10042	0.63958	7.12922
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.08263	0.62381	6.36525
	B->CO (RR)	0.08516	0.61486	6.36828

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (FF)	0.08260	0.59672	6.48402
	B->CO (FF)	0.08748	0.61136	6.53577
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.07327	0.54693	5.64279
	B->CO (FF)	0.07758	0.55983	5.72474

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (RR)	0.13700	0.66714	7.08005
	B->CON (RR)	0.13974	0.66020	7.14339
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.11100	0.58526	6.45940
	B->CON (RR)	0.11318	0.57441	6.47582

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (FF)	0.11306	0.62125	6.62843
	B->CON (FF)	0.11139	0.63018	6.67050
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.09361	0.54784	6.12211
	B->CON (FF)	0.09266	0.55603	6.18590

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (FR)	0.15586	1.31255	17.42630
	B->S (FR)	0.15421	1.32234	17.51900
	CON->S (FR)	0.02488	0.69196	11.24900
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.13468	1.15845	13.77290
	B->S (FR)	0.13367	1.16691	13.85650
	CON->S (FR)	0.02761	0.73418	10.87920

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (RF)	0.17420	1.29406	16.90580
	B->S (RF)	0.17691	1.28668	16.95830
	CON->S (RF)	0.01967	0.54796	8.94352
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.14125	1.00519	11.20020
	B->S (RF)	0.14342	0.99439	11.21130
	CON->S (RF)	0.01801	0.48374	7.22458

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00464	0.00455	0.00987
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00408	0.01012
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00397	0.00399	0.01337
	B	0.00000	0.00000	0.00000
	B	0.00358	0.00351	0.01450

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00646	0.00639	0.01323
	B	0.00000	0.00000	0.00000
	B	0.00679	0.00708	0.01416
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00582	0.00595	0.01716
	B	0.00000	0.00000	0.00000
	B	0.00614	0.00660	0.01819

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00464	0.00454	0.00987
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00408	0.01012
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00397	0.00400	0.01331
	B	0.00000	0.00000	0.00000
	B	0.00357	0.00352	0.01443

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00646	0.00638	0.01307
	B	0.00000	0.00000	0.00000
	B	0.00679	0.00708	0.01394
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00582	0.00594	0.01718
	B	0.00000	0.00000	0.00000
	B	0.00615	0.00661	0.01824

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00646	0.00639	0.01334
	B	0.00000	0.00000	0.00000
	B	0.00679	0.00707	0.01432
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00583	0.00596	0.01732
	B	0.00000	0.00000	0.00000
	B	0.00615	0.00662	0.01823

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00464	0.00456	0.00984
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00409	0.01013
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00397	0.00400	0.01349
	B	0.00000	0.00000	0.00000
	B	0.00357	0.00351	0.01459

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.44127	1.38300	0.44166
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.44567	1.38723	0.44281

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.44115	1.38314	0.46227
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.44558	1.38734	0.46322

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__and2_1	8.30280
sky130_osu_sc_12T_hs__and2_2	10.25640
sky130_osu_sc_12T_hs__and2_4	14.16360
sky130_osu_sc_12T_hs__and2_6	18.07080
sky130_osu_sc_12T_hs__and2_8	21.97800
sky130_osu_sc_12T_hs__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__and2_1	0.00289	0.00300	1.27694
sky130_osu_sc_12T_hs__and2_2	0.00289	0.00301	2.52256
sky130_osu_sc_12T_hs__and2_4	0.00289	0.00301	4.93851
sky130_osu_sc_12T_hs__and2_6	0.00177	0.00178	1.80000
sky130_osu_sc_12T_hs__and2_8	0.00289	0.00301	9.44201
sky130_osu_sc_12T_hs__and2_l	0.00223	0.00231	0.89586

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.03592	0.05664
sky130_osu_sc_12T_hs__and2_2	0.00000	0.05663	0.06087
sky130_osu_sc_12T_hs__and2_4	0.00000	0.09805	0.10904
sky130_osu_sc_12T_hs__and2_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__and2_8	0.00000	0.18089	0.21385
sky130_osu_sc_12T_hs__and2_l	0.00000	0.55604	0.88925

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.06355	0.52609	6.41139
	B->Y (RR)	0.06749	0.52120	6.24708
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.07071	0.46347	6.42442
	B->Y (RR)	0.07467	0.45413	6.25759
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.09592	0.46571	6.68780
	B->Y (RR)	0.09988	0.44912	6.52064
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.14667	0.52316	6.93240
	B->Y (RR)	0.15062	0.49896	6.75099
sky130_osu_sc_12T_hs__and2_l	A->Y (RR)	0.06582	0.58515	6.53963
	B->Y (RR)	0.06973	0.57901	6.35076

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (FF)	0.05927	0.48544	5.64220
	B->Y (FF)	0.06110	0.49482	5.69736
sky130_osu_sc_12T_hs__and2_2	A->Y (FF)	0.06817	0.46515	5.74259
	B->Y (FF)	0.06946	0.47093	5.79478
sky130_osu_sc_12T_hs__and2_4	A->Y (FF)	0.09534	0.49389	6.01724
	B->Y (FF)	0.09444	0.49481	6.06382
sky130_osu_sc_12T_hs__and2_8	A->Y (FF)	0.15218	0.56592	6.26280
	B->Y (FF)	0.14706	0.56072	6.28036
sky130_osu_sc_12T_hs__and2_l	A->Y (FF)	0.05948	0.47883	5.10738
	B->Y (FF)	0.06469	0.49423	5.19829

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00299	0.00349	0.03702
	B	0.00000	0.00000	0.00000
	B	0.00304	0.00310	0.02650
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00573	0.00635	0.03928
	B	0.00000	0.00000	0.00000
	B	0.00579	0.00604	0.02936
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01214	0.01303	0.04371
	B	0.00000	0.00000	0.00000
	B	0.01220	0.01262	0.03472
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02650	0.02658	0.05565
	B	0.00000	0.00000	0.00000
	B	0.02656	0.02701	0.04606
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00237	0.00320	0.04102
	B	0.00000	0.00000	0.00000
	B	0.00242	0.00277	0.03286

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00785	0.00924	0.03835
	B	0.00000	0.00000	0.00000
	B	0.00890	0.01012	0.03833
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00997	0.01152	0.04074
	B	0.00000	0.00000	0.00000
	B	0.01105	0.01242	0.04078
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01561	0.01740	0.04652
	B	0.00000	0.00000	0.00000
	B	0.01661	0.01814	0.04656
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02932	0.02920	0.05822
	B	0.00000	0.00000	0.00000
	B	0.03011	0.02948	0.05766
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00603	0.00767	0.04243
	B	0.00000	0.00000	0.00000
	B	0.00683	0.00829	0.04242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00273	-0.00275	-0.00277
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00273	-0.00275	-0.00277
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00273	-0.00275	-0.00277
sky130_osu_sc_12T_hs__and2_6	B	0.00000	0.00000	0.00000
	B	-0.00042	-0.00042	-0.00042
	!B	0.00000	0.00000	0.00000
	!B	-0.00036	-0.00037	-0.00036
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00273	-0.00275	-0.00277
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00193	-0.00193	-0.00195

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00276	0.00280	0.00277
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00276	0.00280	0.00277
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00276	0.00279	0.00278
sky130_osu_sc_12T_hs__and2_6	B	0.00000	0.00000	0.00000
	B	0.00042	0.00042	0.00042
	!B	0.00000	0.00000	0.00000
	!B	0.00036	0.00037	0.00036
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00276	0.00279	0.00278
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00195	0.00197	0.00196

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00262	-0.00261
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00263	-0.00261
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00263	-0.00261
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	-0.00041	-0.00042	-0.00042
	!A	0.00000	0.00000	0.00000
	!A	-0.00036	-0.00036	-0.00036
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00262	-0.00261
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00184	-0.00184	-0.00184

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00268	0.00264	0.00262
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00269	0.00265	0.00262
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00269	0.00265	0.00263
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.00041	0.00042	0.00042
	!A	0.00000	0.00000	0.00000
	!A	0.00036	0.00036	0.00036
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00269	0.00265	0.00263
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00190	0.00187	0.00185

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	x	0	1
x	x	1	0
1	0	0	1
1	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__aoi21_l	0.00265	0.00283	0.00281	0.55116

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.01487	0.02620

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (FR)	0.08014	0.85821	10.25410
	A1->Y (FR)	0.06397	0.78338	9.63154
	B0->Y (FR)	0.06066	0.86123	10.78090

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (RF)	0.03693	0.41147	4.90684
	A1->Y (RF)	0.03384	0.44442	5.48507
	B0->Y (RF)	0.02245	0.40933	5.22054

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00668	0.00661	0.01109
	A1	0.00000	0.00000	0.00000
	A1	0.00560	0.00551	0.00931
	B0	0.00411	0.00426	0.01177

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00140	0.00124	0.00523
	A1	0.00000	0.00000	0.00000
	A1	0.00144	0.00138	0.00597
	B0	-0.00057	-0.00041	0.00406

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00192	-0.00226	-0.00225
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00228	-0.00229	-0.00229
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00228	-0.00230	-0.00228

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00224	0.00226	0.00225
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00228	0.00230	0.00229
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00236	0.00230	0.00229

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00192	-0.00227	-0.00226
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00228	-0.00229	-0.00229
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00251	-0.00252	-0.00253

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00225	0.00228	0.00226
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00228	0.00229	0.00230
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00252	0.00258	0.00254

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00106	-0.00106	-0.00106

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00115	0.00116	0.00108

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT				OUTPUT
A0	**A1**	**B0**	**B1**	**Y**
0	**x**	**0**	**x**	**1**
0	**x**	**1**	**0**	**1**
x	**x**	**1**	**1**	**0**
1	**0**	**0**	**x**	**1**
1	**0**	**1**	**0**	**1**
1	**1**	**x**	**x**	**0**

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_12T_hs__aoi22_l	0.00265	0.00282	0.00295	0.00277	0.54002

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.01791	0.05241

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (FR)	0.10209	0.88069	10.18640
	A1->Y (FR)	0.09129	0.86470	10.13080
	B0->Y (FR)	0.06367	0.85710	10.66380
	B1->Y (FR)	0.07488	0.87535	10.73610

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (RF)	0.04824	0.42250	4.85511
	A1->Y (RF)	0.04508	0.45242	5.42944
	B0->Y (RF)	0.02645	0.43158	5.39817
	B1->Y (RF)	0.02999	0.39945	4.82789

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00807	0.00799	0.01264
	A1	0.00700	0.00688	0.01141
	B0	0.00444	0.00460	0.01282
	B1	0.00555	0.00569	0.01366

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00282	0.00266	0.00682
	A1	0.00286	0.00292	0.00753
	B0	-0.00038	-0.00011	0.00451
	B1	-0.00032	-0.00029	0.00381

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00196	-0.00225	-0.00225
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00228	-0.00229	-0.00229
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00228	-0.00229	-0.00228
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00228	-0.00230	-0.00228

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00224	0.00225	0.00225
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00228	0.00230	0.00229
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00235	0.00230	0.00229
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00235	0.00230	0.00229

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00195	-0.00226	-0.00226
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00228	-0.00230	-0.00229
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00250	-0.00251	-0.00252
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00250	-0.00251	-0.00252

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00224	0.00226	0.00226
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00228	0.00232	0.00230
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00251	0.00255	0.00253
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00251	0.00255	0.00253

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00105	-0.00106	-0.00105
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00104	-0.00105	-0.00105
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00262	-0.00263	-0.00264
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00262	-0.00263	-0.00264

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00119	0.00120	0.00109
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00104	0.00106	0.00105
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00263	0.00265	0.00265
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00263	0.00265	0.00265

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00107	-0.00107	-0.00107
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00106	-0.00107	-0.00106
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00241	-0.00242	-0.00241
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00241	-0.00242	-0.00241

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00121	0.00121	0.00110
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00106	0.00107	0.00106
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00248	0.00244	0.00242
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00248	0.00244	0.00242

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__buf_1	6.34920
sky130_osu_sc_12T_hs__buf_2	8.30280
sky130_osu_sc_12T_hs__buf_4	12.21000
sky130_osu_sc_12T_hs__buf_6	16.11720
sky130_osu_sc_12T_hs__buf_8	20.02440
sky130_osu_sc_12T_hs__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__buf_1	0.00300	1.19027
sky130_osu_sc_12T_hs__buf_2	0.00300	2.43727
sky130_osu_sc_12T_hs__buf_4	0.00300	4.82714
sky130_osu_sc_12T_hs__buf_6	0.00083	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00301	9.56006
sky130_osu_sc_12T_hs__buf_l	0.00227	0.89842

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.03044	0.03044
sky130_osu_sc_12T_hs__buf_2	0.00000	0.04565	0.05664
sky130_osu_sc_12T_hs__buf_4	0.00000	0.07609	0.10904
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.13696	0.21385
sky130_osu_sc_12T_hs__buf_l	0.00000	0.44562	0.44562

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (RR)**	0.05045	0.50982	6.13418
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.05309	0.42859	6.10456
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.07052	0.41407	6.30268
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.10521	0.45198	6.66459
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.05180	0.55484	6.25981

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (FF)**	0.05547	0.46653	5.39452
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.06456	0.45486	5.65314
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.09156	0.48617	5.96191
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.14759	0.56090	6.35413
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.05749	0.47671	5.19567

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00286	0.00328	0.02541
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00554	0.00612	0.02884
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01178	0.01280	0.03576
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02498	0.02603	0.04809
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00228	0.00305	0.03636

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00756	0.00875	0.03684
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00965	0.01090	0.03904
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01525	0.01677	0.04456
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02896	0.02886	0.05563
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00592	0.00757	0.04346

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00067	-0.00068	-0.00064

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	0.00067	0.00068	0.00064

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT			OUTPUT	
D	RN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	0	1
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffr_1	42.49080
sky130_osu_sc_12T_hs__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_hs__dffr_1	0.00277	0.00275	0.00868	1.27723	1.26416
sky130_osu_sc_12T_hs__dffr_l	0.00277	0.00275	0.00867	0.89911	0.89590

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.32406	0.68253
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.73925	1.09771

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RR)	0.26001	1.17596	13.40830
	QN->Q (FR)	0.02644	0.76016	12.26520
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.25535	1.22162	12.42420
	QN->Q (FR)	0.02908	0.77880	11.46260

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RF)	0.26036	1.19564	14.02410
	QN->Q (RF)	0.01869	0.51397	8.30814
	RN->Q (FF)	0.19343	1.26465	16.08850
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.26301	1.29289	13.55640
	QN->Q (RF)	0.01955	0.51727	7.72734
	RN->Q (FF)	0.19662	1.36084	15.60580

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->QN (RR)	0.23489	0.70173	6.29582
	RN->QN (FR)	0.16782	0.77091	8.36032
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.23426	0.75632	6.25914
	RN->QN (FR)	0.16750	0.82477	8.31193

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	**CK->QN (RF)**	0.22054	0.55486	3.73776
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.21361	0.55493	3.37124

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.05013	-0.05958	0.03755
	setup	CK (R)	0.19966	0.22468	0.63970
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.05043	-0.05958	0.03902
	setup	CK (R)	0.19704	0.22535	0.64133

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.11191	-0.29442	-3.85196
	setup	CK (R)	0.13370	0.30469	3.90645
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10973	-0.29588	-3.85437
	setup	CK (R)	0.13370	0.30469	3.90645

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.05013	-0.05958	0.03755
	setup	CK (R)	0.19966	0.22468	0.63970
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.05043	-0.05958	0.03902
	setup	CK (R)	0.19704	0.22535	0.64133

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.11191	-0.29442	-3.85196
	setup	CK (R)	0.13370	0.30469	3.90645
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10973	-0.29588	-3.85437
	setup	CK (R)	0.13370	0.30469	3.90645

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.17299	0.20400	0.90673
	removal	CK (R)	-0.03711	-0.04504	-0.06604
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.17511	0.20314	0.90269
	removal	CK (R)	-0.03711	-0.04504	-0.06604

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.17299	0.20400	0.90673
	removal	CK (R)	-0.03711	-0.04504	-0.06604
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.17511	0.20314	0.90269
	removal	CK (R)	-0.03711	-0.04504	-0.06604

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	RN ()	0.11967	0.39429	13.33370
	min_pulse_width	RN ()	0.11967	0.39429	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.11668	0.39429	13.33370
	min_pulse_width	RN ()	0.11668	0.39429	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	CK ()	0.11967	0.39429	13.33370
	min_pulse_width	CK ()	0.13459	0.39429	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.11071	0.39429	13.33370
	min_pulse_width	CK ()	0.13161	0.39429	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	CK ()	0.25996	0.39429	13.33370
	min_pulse_width	CK ()	0.10773	0.39429	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.25996	0.39429	13.33370
	min_pulse_width	CK ()	0.10773	0.39429	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00784	0.00673	0.01005
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00710	0.00647	0.02068

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00890	0.00774	0.00730
	RN	-0.00098	-0.06388	-1.03455
	RN	0.02027	0.01947	0.01982
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00815	0.00748	0.01699
	RN	-0.00098	-0.05175	-0.72828
	RN	0.01952	0.01922	0.02928

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00890	0.00775	0.00759
	RN	-0.00098	-0.06348	-1.02397
	RN	0.02027	0.01947	0.01990
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00815	0.00749	0.01691
	RN	-0.00098	-0.05164	-0.72568
	RN	0.01952	0.01922	0.02926

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00673	0.01023
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00706	0.00644	0.02046

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00186	-0.00225	-0.00228
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00986	0.00972	0.03241
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00396	0.00393	0.02654
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00186	-0.00225	-0.00228
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00986	0.00973	0.03242
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00397	0.00394	0.02654

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00226	0.00228	0.00228
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01485	0.01486	0.03812
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00730	0.00736	0.03001
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00227	0.00229	0.00229
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01486	0.01487	0.03813
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00730	0.00736	0.03002

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00302	0.00343	0.03919
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00913	0.00935	0.04650
sky130_osu_sc_12T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00303	0.00344	0.03919
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00914	0.00936	0.04651

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00790	0.00884	0.04493
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01558	0.01633	0.05318
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00790	0.00885	0.04493
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01559	0.01634	0.05319

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00060	-0.00046	0.03572
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00498	0.00461	0.04171
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00063	-0.00043	0.03563
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00060	-0.00045	0.03573
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00499	0.00462	0.04172
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00063	-0.00042	0.03563

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01187	0.01283	0.04956
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02441	0.02481	0.06747
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01825	0.01888	0.05608
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02376	0.02547	0.08686
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01282	0.01366	0.04995
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01187	0.01283	0.04956
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02442	0.02482	0.06747
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01826	0.01889	0.05609
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02377	0.02548	0.08687
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01283	0.01367	0.04996

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT				OUTPUT	
D	**RN**	**SN**	**CK**	**Q**	**QN**
0	**1**	**1**	**R**	**0**	**1**
1	**1**	**1**	**R**	**1**	**0**
x	**0**	**x**	**x**	**0**	**1**
x	**1**	**0**	**x**	**1**	**0**
x	**1**	**1**	**x**	**IQ**	**IQN**

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffsr_1	46.39800
sky130_osu_sc_12T_hs__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_hs__dffsr_1	0.00273	0.00276	0.00644	0.00879	1.32252	1.32535
sky130_osu_sc_12T_hs__dffsr_l	0.00273	0.00276	0.00643	0.00878	0.89928	0.89742

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.11252	0.14685
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.52770	0.56204

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RR)	0.27933	1.20644	13.70110
	QN->Q (FR)	0.02481	0.73161	11.92030
	RN->Q (RR)	0.22460	1.16121	13.73600
	SN->Q (FR)	0.21128	1.26828	15.91960
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.27854	1.25509	12.48990
	QN->Q (FR)	0.02901	0.77900	11.45910
	RN->Q (RR)	0.22454	1.21232	12.53500
	SN->Q (FR)	0.21054	1.31600	14.70150

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RF)	0.29911	1.24004	14.26540
	QN->Q (RF)	0.01855	0.51947	8.46686
	RN->Q (FF)	0.20446	1.28199	16.31870
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.30306	1.33829	13.60530
	QN->Q (RF)	0.01943	0.51673	7.72081
	RN->Q (FF)	0.20873	1.38014	15.65150

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RR)	0.27329	0.74300	6.40446
	RN->QN (FR)	0.17882	0.78536	8.46104
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.27397	0.80237	6.32195
	RN->QN (FR)	0.17983	0.84491	8.38616

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RF)	0.24136	0.59186	3.99621
	RN->QN (RF)	0.18778	0.54900	4.04479
	SN->QN (FF)	0.17399	0.65456	6.22134
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.23750	0.58862	3.44079
	RN->QN (RF)	0.18392	0.54652	3.48636
	SN->QN (FF)	0.17006	0.65028	5.65966

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.05818	-0.06780	-0.00801
	setup	CK (R)	0.21236	0.23232	0.74226
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.05818	-0.06780	-0.00850
	setup	CK (R)	0.21266	0.23192	0.74150

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.12610	-0.31176	-3.89202
	setup	CK (R)	0.15424	0.31951	3.94851
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12474	-0.30923	-3.89440
	setup	CK (R)	0.15416	0.31951	3.94851

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.05818	-0.06780	-0.00801
	setup	CK (R)	0.21236	0.23232	0.74226
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.05818	-0.06780	-0.00850
	setup	CK (R)	0.21266	0.23192	0.74150

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.12610	-0.31176	-3.89202
	setup	CK (R)	0.15424	0.31951	3.94851
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12474	-0.30923	-3.89440
	setup	CK (R)	0.15416	0.31951	3.94851

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.16819	0.19308	0.93444
	removal	CK (R)	-0.02835	-0.03386	-0.06297
	hold	SN (R)	-0.16587	-0.28326	-1.19970
	setup	SN (R)	0.18727	0.31433	4.12701
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.16849	0.19276	0.93354
	removal	CK (R)	-0.02835	-0.03386	-0.06297
	hold	SN (R)	-0.16017	-0.27739	-1.17338
	setup	SN (R)	0.18788	0.30954	4.04854

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.16819	0.19308	0.93444
	removal	CK (R)	-0.02835	-0.03386	-0.06297
	hold	SN (R)	-0.16610	-0.28505	-1.19970
	hold	SN (R)	-0.16587	-0.28326	-1.20949
	setup	SN (R)	0.18727	0.31364	3.90965
	setup	SN (R)	0.18688	0.31433	4.12701
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.16849	0.19276	0.93354
	removal	CK (R)	-0.02835	-0.03386	-0.06297
	hold	SN (R)	-0.16017	-0.27739	-1.17544
	hold	SN (R)	-0.16198	-0.27942	-1.17338
	setup	SN (R)	0.18788	0.30820	3.75614
	setup	SN (R)	0.17964	0.30954	4.04854

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	RN ()	0.13758	0.39429	13.33370
	min_pulse_width	RN ()	0.14355	0.39429	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.13758	0.39429	13.33370
	min_pulse_width	RN ()	0.14056	0.39429	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.03682	0.06402	4.71176
	removal	CK (R)	-0.01586	-0.04789	-0.27146
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.03272	0.06371	4.53826
	removal	CK (R)	-0.01586	-0.04789	-0.27146

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.03682	0.06402	4.71176
	removal	CK (R)	-0.01586	-0.04789	-0.27146
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.03272	0.06371	4.53826
	removal	CK (R)	-0.01586	-0.04789	-0.27146

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	SN ()	0.17041	0.39429	13.33370
	min_pulse_width	SN ()	0.17638	0.39429	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.17041	0.39429	13.33370
	min_pulse_width	SN ()	0.16743	0.39429	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	CK ()	0.12265	0.39429	13.33370
	min_pulse_width	CK ()	0.15250	0.39429	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.11967	0.39429	13.33370
	min_pulse_width	CK ()	0.14952	0.39429	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	CK ()	0.27489	0.39429	13.33370
	min_pulse_width	CK ()	0.13161	0.39429	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.27489	0.39429	13.33370
	min_pulse_width	CK ()	0.13161	0.39429	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00975	0.00860	0.01090
	RN	0.01777	0.01649	0.01106
	SN	-0.00098	-0.06523	-1.07124
	SN	0.01988	0.01814	0.01174
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00906	0.00839	0.02212
	RN	0.01707	0.01633	0.02271
	SN	-0.00098	-0.05175	-0.72842
	SN	0.01918	0.01797	0.02262

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01031	0.00957	0.01408
	RN	-0.00098	-0.06523	-1.07124
	RN	0.02134	0.02088	0.02626
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00958	0.00898	0.01856
	RN	-0.00098	-0.05175	-0.72842
	RN	0.02059	0.02027	0.03039

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01031	0.00956	0.01406
	RN	-0.00098	-0.06531	-1.07353
	RN	0.02134	0.02086	0.02606
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00958	0.00899	0.01846
	RN	-0.00098	-0.05169	-0.72691
	RN	0.02059	0.02027	0.03075

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00971	0.00855	0.01062
	RN	0.01773	0.01645	0.01131
	SN	-0.00098	-0.06531	-1.07345
	SN	0.01984	0.01811	0.01201
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00901	0.00835	0.02193
	RN	0.01702	0.01625	0.02258
	SN	-0.00098	-0.05169	-0.72687
	SN	0.01913	0.01793	0.02356

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00225	-0.00229	-0.00229
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01238	0.01226	0.03464
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00435	0.00431	0.02670
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00431	0.00427	0.02670
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00435	0.00432	0.02673
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00225	-0.00229	-0.00229
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01238	0.01226	0.03464
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00435	0.00431	0.02671
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00431	0.00428	0.02670
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00435	0.00432	0.02673

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00235	0.00231	0.00229
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01711	0.01707	0.03977
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00790	0.00798	0.03049
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00797	0.00803	0.03050
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00787	0.00795	0.03045
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00235	0.00231	0.00229
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01712	0.01707	0.03978
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00790	0.00798	0.03050
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00797	0.00803	0.03051
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00787	0.00795	0.03046

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00239	0.00275	0.03835
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01074	0.01089	0.04704
sky130_osu_sc_12T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00240	0.00276	0.03836
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01074	0.01089	0.04704

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00855	0.00957	0.04583
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01647	0.01722	0.05380
sky130_osu_sc_12T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00855	0.00957	0.04583
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01647	0.01722	0.05380

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00581	-0.00582	-0.00585
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00561	-0.00634	-0.00631
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00552	-0.00587	-0.00587
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00287	0.00291	0.02574
sky130_osu_sc_12T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00580	-0.00582	-0.00585
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00560	-0.00633	-0.00631
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00552	-0.00587	-0.00586
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00287	0.00289	0.02574

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00583	0.00596	0.00586
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00629	0.00636	0.00631
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00583	0.00589	0.00588
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01335	0.01312	0.03484
sky130_osu_sc_12T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00583	0.00597	0.00586
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00630	0.00636	0.00632
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00584	0.00589	0.00588
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01335	0.01312	0.03484

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00067	-0.00053	0.03562
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00581	0.00545	0.04250
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00571	0.00535	0.04242
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00049	-0.00031	0.03572
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00287	0.00330	0.06922
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00066	-0.00053	0.03562
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00581	0.00546	0.04250
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00572	0.00536	0.04242
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00049	-0.00030	0.03573
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00287	0.00330	0.06923

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02725	0.02766	0.07001
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01209	0.01303	0.04974
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01856	0.01923	0.05634
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01860	0.01928	0.05665
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02612	0.02761	0.08887
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01283	0.01364	0.04992
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01614	0.01788	0.08438
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02725	0.02767	0.07001
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01210	0.01304	0.04975
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01856	0.01923	0.05634
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01860	0.01928	0.05666
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02612	0.02761	0.08887
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01283	0.01366	0.04993
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01614	0.01789	0.08438

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT			OUTPUT	
D	SN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	1	0
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffs_1	38.58360
sky130_osu_sc_12T_hs__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_hs__dffs_1	0.00275	0.00535	0.00863	1.26644	1.26786
sky130_osu_sc_12T_hs__dffs_l	0.00275	0.00535	0.00863	0.89621	0.90059

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.66671	1.84317
sky130_osu_sc_12T_hs__dffs_l	0.00000	1.08189	2.25836

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RR)	0.19567	1.09157	13.17660
	QN->Q (FR)	0.02641	0.75462	12.15400
	SN->Q (FR)	0.15537	1.19932	15.21060
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.19506	1.14623	12.28480
	QN->Q (FR)	0.02903	0.77605	11.40780
	SN->Q (FR)	0.15499	1.25068	14.29970

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RF)	0.28473	1.21858	13.90380
	QN->Q (RF)	0.01862	0.50804	8.24462
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.28553	1.31559	13.51470
	QN->Q (RF)	0.01948	0.51503	7.69390

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RR)	0.25866	0.73042	6.32486
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.25624	0.78286	6.30607

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RF)	0.16023	0.47843	3.65360
	SN->QN (FF)	0.11941	0.58634	5.68596
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.15709	0.48465	3.30151
	SN->QN (FF)	0.11646	0.58894	5.31822

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.03689	-0.04560	0.05567
	setup	CK (R)	0.14090	0.17255	0.56843
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.03769	-0.04804	0.05355
	setup	CK (R)	0.14088	0.17222	0.56340

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.11215	-0.29597	-3.88041
	setup	CK (R)	0.14075	0.30673	3.92335
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.11357	-0.29617	-3.88194
	setup	CK (R)	0.14072	0.30673	3.92335

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.03689	-0.04560	0.05567
	setup	CK (R)	0.14090	0.17255	0.56843
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.03769	-0.04804	0.05355
	setup	CK (R)	0.14088	0.17222	0.56340

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.11215	-0.29597	-3.88041
	setup	CK (R)	0.14075	0.30673	3.92335
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.11357	-0.29617	-3.88194
	setup	CK (R)	0.14072	0.30673	3.92335

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.03478	0.06101	3.24447
	removal	CK (R)	-0.01730	-0.04789	-0.40346
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03483	0.06089	3.06667
	removal	CK (R)	-0.01730	-0.04789	-0.40346

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.03478	0.06101	3.24447
	removal	CK (R)	-0.01730	-0.04789	-0.40346
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03483	0.06089	3.06667
	removal	CK (R)	-0.01730	-0.04789	-0.40346

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	SN ()	0.10773	0.39429	13.33370
	min_pulse_width	SN ()	0.11071	0.39429	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.10773	0.39429	13.33370
	min_pulse_width	SN ()	0.10474	0.39429	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	CK ()	0.08086	0.39429	13.33370
	min_pulse_width	CK ()	0.14355	0.39429	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.07788	0.39429	13.33370
	min_pulse_width	CK ()	0.13758	0.39429	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	CK ()	0.20325	0.39429	13.33370
	min_pulse_width	CK ()	0.11967	0.39429	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.20325	0.39429	13.33370
	min_pulse_width	CK ()	0.11967	0.39429	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00783	0.00674	0.01084
	SN	-0.00098	-0.06355	-1.02582
	SN	0.01423	0.01380	0.02654
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00708	0.00650	0.02096
	SN	-0.00098	-0.05165	-0.72593
	SN	0.01348	0.01354	0.03683

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00884	0.00776	0.00807
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00810	0.00748	0.01731

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00884	0.00777	0.00812
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00810	0.00748	0.01720

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00779	0.00675	0.01066
	SN	-0.00098	-0.06360	-1.02688
	SN	0.01419	0.01379	0.02617
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00704	0.00647	0.02058
	SN	-0.00098	-0.05180	-0.72944
	SN	0.01345	0.01351	0.03633

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00227	-0.00231	-0.00232
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00964	0.00955	0.03313
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00394	0.00391	0.02647
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00227	-0.00231	-0.00231
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00964	0.00955	0.03313
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00394	0.00391	0.02647

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00240	0.00235	0.00234
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01467	0.01462	0.03780
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00731	0.00740	0.03013
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00240	0.00236	0.00234
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01467	0.01462	0.03780
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00731	0.00740	0.03014

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00428	-0.00430	-0.00431
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00284	0.00298	0.03831
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00427	-0.00429	-0.00430
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00285	0.00297	0.03832

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00435	0.00435	0.00432
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00933	0.01017	0.04690
sky130_osu_sc_12T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00435	0.00435	0.00432
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00933	0.01017	0.04690

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00061	-0.00046	0.03575
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00055	-0.00036	0.03574
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00252	0.00303	0.06936
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00060	-0.00045	0.03575
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00055	-0.00036	0.03574
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00253	0.00303	0.06936

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02431	0.02473	0.06798
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01186	0.01283	0.04958
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02342	0.02496	0.08646
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01275	0.01359	0.04991
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01529	0.01712	0.08399
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02432	0.02474	0.06798
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01187	0.01283	0.04959
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02342	0.02496	0.08647
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01275	0.01360	0.04991
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01530	0.01713	0.08399

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
D	CK	Q
0	R	0
1	R	1
x	x	IQ

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dff_1	32.23440
sky130_osu_sc_12T_hs__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_hs__dff_1	0.00290	0.00851	1.14592
sky130_osu_sc_12T_hs__dff_l	0.00290	0.00849	0.84267

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.10154	0.12104
sky130_osu_sc_12T_hs__dff_l	0.00000	0.51673	0.53622

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	**CK->Q (RR)**	0.16611	0.63890	6.11044
sky130_osu_sc_12T_hs__dff_l	**CK->Q (RR)**	0.16518	0.69278	6.12857

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	**CK->Q (RF)**	0.24478	0.54584	3.42195
sky130_osu_sc_12T_hs__dff_l	**CK->Q (RF)**	0.24504	0.56313	3.23181

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	hold	CK (R)	-0.03665	-0.04491	0.03258
	setup	CK (R)	0.11265	0.14980	0.54024
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.03666	-0.04491	0.03349
	setup	CK (R)	0.11283	0.15006	0.53903

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	hold	CK (R)	-0.10236	-0.29589	-3.89087
	setup	CK (R)	0.12462	0.30673	3.92720
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.10259	-0.29589	-3.89112
	setup	CK (R)	0.12462	0.30673	3.92720

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	min_pulse_width	CK ()	0.07191	0.39429	13.33370
	min_pulse_width	CK ()	0.12862	0.39429	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.06892	0.39429	13.33370
	min_pulse_width	CK ()	0.12564	0.39429	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	min_pulse_width	CK ()	0.17340	0.39429	13.33370
	min_pulse_width	CK ()	0.09877	0.39429	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.17340	0.39429	13.33370
	min_pulse_width	CK ()	0.09877	0.39429	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01642	0.01667	0.06988
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01487	0.01517	0.06835

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01794	0.01775	0.05486
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01646	0.01628	0.05335

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00185	-0.00225	-0.00227
	!CK	0.00000	0.00000	0.00000
	!CK	0.00861	0.00853	0.03155
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00185	-0.00224	-0.00227
	!CK	0.00000	0.00000	0.00000
	!CK	0.00861	0.00853	0.03155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00225	0.00227	0.00227
	!CK	0.00000	0.00000	0.00000
	!CK	0.01511	0.01506	0.03868
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00225	0.00227	0.00227
	!CK	0.00000	0.00000	0.00000
	!CK	0.01512	0.01506	0.03868

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00064	-0.00048	0.03574
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00056	-0.00035	0.03575
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00064	-0.00048	0.03574
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00056	-0.00035	0.03575

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01183	0.01282	0.04957
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02329	0.02377	0.06731
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02371	0.02535	0.08747
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01266	0.01357	0.04984
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01183	0.01283	0.04957
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02329	0.02377	0.06732
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02371	0.02541	0.08748
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01267	0.01357	0.04984

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__inv_1	4.39560
sky130_osu_sc_12T_hs__inv_10	21.97800
sky130_osu_sc_12T_hs__inv_2	6.34920
sky130_osu_sc_12T_hs__inv_3	8.30280
sky130_osu_sc_12T_hs__inv_4	10.25640
sky130_osu_sc_12T_hs__inv_6	14.16360
sky130_osu_sc_12T_hs__inv_8	18.07080
sky130_osu_sc_12T_hs__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__inv_1	0.00279	1.14064
sky130_osu_sc_12T_hs__inv_10	0.02493	11.53363
sky130_osu_sc_12T_hs__inv_2	0.00518	2.36374
sky130_osu_sc_12T_hs__inv_3	0.00767	3.49674
sky130_osu_sc_12T_hs__inv_4	0.01010	4.71332
sky130_osu_sc_12T_hs__inv_6	0.01511	6.99138
sky130_osu_sc_12T_hs__inv_8	0.02002	9.26504
sky130_osu_sc_12T_hs__inv_l	0.00223	0.79752

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.01522	0.02620
sky130_osu_sc_12T_hs__inv_10	0.00000	0.15218	0.26203
sky130_osu_sc_12T_hs__inv_2	0.00000	0.03043	0.05241
sky130_osu_sc_12T_hs__inv_3	0.00000	0.04565	0.07861
sky130_osu_sc_12T_hs__inv_4	0.00000	0.06087	0.10481
sky130_osu_sc_12T_hs__inv_6	0.00000	0.09130	0.15722
sky130_osu_sc_12T_hs__inv_8	0.00000	0.12174	0.20962
sky130_osu_sc_12T_hs__inv_l	0.00000	0.22281	0.44364

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (FR)**	0.02552	0.68966	10.83460
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.02963	0.44695	10.87880
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.01872	0.58134	10.79020
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.02020	0.54278	10.87570
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.01996	0.51139	10.83580
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.02224	0.47748	10.81190
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.02564	0.45829	10.81300
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.02914	0.72044	10.31010

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (RF)**	0.01714	0.44586	6.97704
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02238	0.27273	7.29612
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01363	0.38056	7.15512
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01476	0.35550	7.28350
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01452	0.32997	7.29113
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01726	0.30264	7.29849
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.01980	0.28498	7.30178
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.01847	0.45891	6.58310

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00384	0.00441	0.01043
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03126	0.03932	0.09679
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00656	0.00780	0.01958
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01011	0.01186	0.02945
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01285	0.01548	0.03867
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01899	0.02478	0.05808
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02509	0.03176	0.07745
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00305	0.00366	0.01329

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00068	-0.00050	0.00315
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01161	-0.00782	0.02763
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00225	-0.00138	0.00542
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00292	-0.00207	0.00852
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00456	-0.00327	0.01085
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00699	-0.00500	0.01637
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00941	-0.00630	0.02196
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00048	-0.00036	0.00274

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT			OUTPUT
A0	A1	S0	Y
0	0	x	0
0	1	0	0
x	1	1	1
1	x	0	1
1	0	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_hs__mux2_1	0.34302	0.34309	0.00576	0.34985

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.03120	0.03120

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (RR)	-	0.00989	0.18688	1.90051
	A1->Y (RR)	-	0.01160	0.18913	1.89898
	S0->Y (RR)	(!A0 * A1)	0.03648	0.24262	1.21858
	S0->Y (FR)	(A0 * !A1)	0.02789	0.35156	3.52527

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (FF)	-	0.01180	0.20993	2.20416
	A1->Y (FF)	-	0.01057	0.20752	2.19733
	S0->Y (FF)	(!A0 * A1)	0.05345	0.33101	2.70695
	S0->Y (RF)	(A0 * !A1)	0.01901	0.24170	2.06179

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00386	-0.00385	-0.00386
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00246	-0.00246	-0.00246
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00503	0.00649	0.04358
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00246	-0.00179	0.03483

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00386	0.00386	0.00387
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00246	0.00246	0.00246
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00063	0.00135	0.03844
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01046	0.01172	0.04824

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00090	-0.00090	-0.00090

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00090	0.00090	0.00090

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00108	-0.00108	-0.00108

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00108	0.00108	0.00108

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00093	-0.00022	0.03660
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00089	-0.00019	0.03663

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00803	0.00916	0.04603
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00744	0.00873	0.04586

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nand2_1	6.34920
sky130_osu_sc_12T_hs__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nand2_1	0.00278	0.00279	1.13193
sky130_osu_sc_12T_hs__nand2_l	0.00218	0.00222	0.79414

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.01521	0.05241
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.22281	0.88727

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (FR)	0.02658	0.69095	10.82080
	B->Y (FR)	0.03021	0.66337	10.33750
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.02943	0.72024	10.29500
	B->Y (FR)	0.03560	0.72485	10.27970

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (RF)	0.02462	0.56139	8.69772
	B->Y (RF)	0.02805	0.53010	8.08002
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.02620	0.57715	8.19817
	B->Y (RF)	0.02956	0.54856	7.57861

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00406	0.00454	0.00987
	B	0.00000	0.00000	0.00000
	B	0.00522	0.00566	0.01132
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00310	0.00365	0.01196
	B	0.00000	0.00000	0.00000
	B	0.00397	0.00445	0.01296

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00045	-0.00038	0.00282
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00044	0.00236
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00028	-0.00022	0.00248
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00027	0.00213

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00263	-0.00265	-0.00266
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00187	-0.00188	-0.00189

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00265	0.00269	0.00267
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00188	0.00190	0.00189

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00245	-0.00245	-0.00245
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00175	-0.00176	-0.00175

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00252	0.00248	0.00246
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00180	0.00177	0.00176

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
x	1	0
1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nor2_1	6.34920
sky130_osu_sc_12T_hs__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nor2_1	0.00274	0.00301	0.62149
sky130_osu_sc_12T_hs__nor2_l	0.00210	0.00231	0.44994

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.01223	0.02620
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.14838	0.44363

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (FR)	0.05652	0.81257	10.39350
	B->Y (FR)	0.04423	0.81045	10.67120
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.05995	0.86212	10.06040
	B->Y (FR)	0.05026	0.85196	10.19960

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (RF)	0.02251	0.36763	4.72644
	B->Y (RF)	0.01821	0.36005	4.71132
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02264	0.38245	4.54987
	B->Y (RF)	0.01935	0.37533	4.53676

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00540	0.00537	0.01016
	B	0.00000	0.00000	0.00000
	B	0.00419	0.00463	0.01234
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00397	0.00399	0.00998
	B	0.00000	0.00000	0.00000
	B	0.00320	0.00342	0.01507

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00060	0.00061	0.00556
	B	0.00000	0.00000	0.00000
	B	-0.00053	-0.00032	0.00450
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00043	0.00045	0.00479
	B	0.00000	0.00000	0.00000
	B	-0.00032	-0.00016	0.00397

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00185	-0.00227	-0.00229
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00120	-0.00153	-0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00228	0.00230	0.00229
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00155	0.00158	0.00157

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00106	-0.00107	-0.00106
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00074	-0.00075	-0.00074

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00111	0.00112	0.00107
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00078	0.00078	0.00076

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	0	x	1
x	1	0	1
x	1	1	0
1	x	0	1
1	x	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__oai21_l	0.00279	0.00289	0.00244	0.62053

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.17401	0.46984

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (FR)	0.06339	0.83146	10.70570
	A1->Y (FR)	0.07839	0.83715	10.43220
	B0->Y (FR)	0.03609	0.65620	8.92052

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (RF)	0.03425	0.43221	5.40339
	A1->Y (RF)	0.04037	0.43270	5.33270
	B0->Y (RF)	0.02651	0.47370	6.25155

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00593	0.00621	0.01288
	A1	0.00000	0.00000	0.00000
	A1	0.00718	0.00709	0.01137
	B0	0.00349	0.00396	0.01687

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00024	0.00026	0.00388
	A1	0.00000	0.00000	0.00000
	A1	0.00138	0.00123	0.00498
	B0	0.00057	0.00067	0.00487

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00105	-0.00106	-0.00106
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00230	-0.00232	-0.00232
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00235	-0.00236	-0.00236

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00112	0.00112	0.00109
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00231	0.00232	0.00232
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00239	0.00238	0.00237

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00178	-0.00219	-0.00221
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00226	-0.00230	-0.00230
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00232	-0.00234	-0.00233

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00220	0.00223	0.00221
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00228	0.00230	0.00230
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00236	0.00235	0.00234

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00196	-0.00196	-0.00201

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00200	0.00204	0.00201

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	0	x	x	1
x	1	0	0	1
x	1	x	1	0
x	1	1	x	0
1	x	0	0	1
1	x	x	1	0
1	x	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__oai22_l	0.00263	0.00275	0.00292	0.00288	0.65174

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.01816	0.05241

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (FR)	0.08209	0.83082	10.43560
	A1->Y (FR)	0.07038	0.82863	10.73580
	B0->Y (FR)	0.04566	0.80448	10.71760
	B1->Y (FR)	0.06038	0.81006	10.42240

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (RF)	0.05484	0.46851	5.63829
	A1->Y (RF)	0.04467	0.45497	5.60471
	B0->Y (RF)	0.03768	0.49706	6.46807
	B1->Y (RF)	0.04841	0.51154	6.53397

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00914	0.00907	0.01323
	A1	0.00789	0.00821	0.01475
	B0	0.00440	0.00482	0.01187
	B1	0.00702	0.00696	0.01104

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00213	0.00198	0.00562
	A1	-0.00014	-0.00014	0.00350
	B0	-0.00020	-0.00004	0.00429
	B1	0.00090	0.00085	0.00518

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00182	-0.00224	-0.00224
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00182	-0.00224	-0.00224
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00219	-0.00224	-0.00223
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00226	-0.00226	-0.00226

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00223	0.00225	0.00224
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00223	0.00225	0.00224
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00222	0.00224	0.00223
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00228	0.00228	0.00227

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00103	-0.00104	-0.00103
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00103	-0.00104	-0.00103
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00219	-0.00222	-0.00222
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00225	-0.00226	-0.00225

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00108	0.00109	0.00105
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00108	0.00109	0.00105
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00221	0.00222	0.00222
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00227	0.00228	0.00226

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00104	-0.00105	-0.00105
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00104	-0.00105	-0.00105
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00257	-0.00260	-0.00260
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00257	-0.00258	-0.00264

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00109	0.00110	0.00106
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00109	0.00111	0.00106
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00260	0.00262	0.00260
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00263	0.00269	0.00265

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00181	-0.00222	-0.00222
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00181	-0.00222	-0.00222
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00262	-0.00268	-0.00266
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00262	-0.00263	-0.00268

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00222	0.00224	0.00222
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00222	0.00223	0.00222
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00266	0.00268	0.00266
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00268	0.00272	0.00270

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
x	1	1
1	x	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__or2_1	8.30280
sky130_osu_sc_12T_hs__or2_2	10.25640
sky130_osu_sc_12T_hs__or2_4	14.16360
sky130_osu_sc_12T_hs__or2_8	21.97800
sky130_osu_sc_12T_hs__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__or2_1	0.00309	0.00286	1.19049
sky130_osu_sc_12T_hs__or2_2	0.00310	0.00286	2.43079
sky130_osu_sc_12T_hs__or2_4	0.00310	0.00286	4.79864
sky130_osu_sc_12T_hs__or2_8	0.00310	0.00286	9.37465
sky130_osu_sc_12T_hs__or2_l	0.00235	0.00221	0.83325

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.02196	0.03467
sky130_osu_sc_12T_hs__or2_2	0.00000	0.03168	0.06087
sky130_osu_sc_12T_hs__or2_4	0.00000	0.05113	0.11328
sky130_osu_sc_12T_hs__or2_8	0.00000	0.09003	0.21809
sky130_osu_sc_12T_hs__or2_l	0.00000	0.26078	0.44760

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (RR)	0.05843	0.53629	6.11521
	B->Y (RR)	0.05151	0.51362	6.03784
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.06165	0.45329	6.07950
	B->Y (RR)	0.05439	0.43190	5.99644
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.07935	0.43468	6.28630
	B->Y (RR)	0.07185	0.41741	6.21476
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.11412	0.46753	6.60328
	B->Y (RR)	0.10640	0.45443	6.52388
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.05995	0.58510	5.97490
	B->Y (RR)	0.05425	0.56571	5.96511

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (FF)	0.10254	0.53253	5.64759
	B->Y (FF)	0.08465	0.52282	5.73789
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.12191	0.52859	5.90829
	B->Y (FF)	0.10433	0.52582	5.98469
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.17261	0.57899	6.24052
	B->Y (FF)	0.15501	0.58138	6.30668
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.27740	0.69453	6.62877
	B->Y (FF)	0.25986	0.69662	6.70974
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.10765	0.53793	5.21268
	B->Y (FF)	0.09148	0.52735	5.30004

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00416	0.00420	0.02120
	B	0.00000	0.00000	0.00000
	B	0.00308	0.00362	0.02393
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00688	0.00718	0.02505
	B	0.00000	0.00000	0.00000
	B	0.00575	0.00659	0.02740
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01314	0.01383	0.03256
	B	0.00000	0.00000	0.00000
	B	0.01198	0.01337	0.03481
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02651	0.02718	0.04580
	B	0.00000	0.00000	0.00000
	B	0.02524	0.02676	0.04758
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00319	0.00344	0.02099
	B	0.00000	0.00000	0.00000
	B	0.00248	0.00313	0.02789

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00918	0.00904	0.02739
	B	0.00000	0.00000	0.00000
	B	0.00762	0.00864	0.03705
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01144	0.01143	0.02968
	B	0.00000	0.00000	0.00000
	B	0.00988	0.01091	0.03858
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01798	0.01723	0.03492
	B	0.00000	0.00000	0.00000
	B	0.01637	0.01692	0.04294
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03620	0.02910	0.04610
	B	0.00000	0.00000	0.00000
	B	0.03451	0.02856	0.05247
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00692	0.00713	0.02690
	B	0.00000	0.00000	0.00000
	B	0.00586	0.00719	0.03900

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00188	-0.00229	-0.00231
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00188	-0.00229	-0.00231
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00187	-0.00229	-0.00231
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00187	-0.00229	-0.00231
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00120	-0.00155	-0.00156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00229	0.00231	0.00231
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00229	0.00231	0.00231
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00229	0.00231	0.00231
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00229	0.00232	0.00231
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00157	0.00158	0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00107	-0.00106
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00107	-0.00106
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00107	-0.00106
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00106	-0.00107	-0.00106
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00072	-0.00073	-0.00073

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00112	0.00113	0.00108
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00113	0.00108
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00112	0.00113	0.00108
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00112	0.00113	0.00108
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00076	0.00077	0.00074

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	OE	Y
-	0	HiZ
0	1	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tbufi_1	8.30280
sky130_osu_sc_12T_hs__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tbufi_1	0.00299	0.00392	0.64893
sky130_osu_sc_12T_hs__tbufi_l	0.00232	0.00306	0.44710

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.01710	0.05241
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.22387	0.88726

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (FR)	0.04109	0.79979	10.68060
	OE->Y (FR)	0.04232	0.30447	5.09328
	OE->Y (RR)	0.06862	0.62502	6.12892
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.04854	0.84620	10.13920
	OE->Y (FR)	0.04298	0.30444	5.09320
	OE->Y (RR)	0.07296	0.69807	6.11345

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (RF)	0.02418	0.45403	6.09564
	OE->Y (FF)	0.04302	0.30447	5.09324
	OE->Y (RF)	0.02269	0.41942	5.46750
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.02603	0.46673	5.66865
	OE->Y (FF)	0.04393	0.30443	5.09325
	OE->Y (RF)	0.02451	0.43071	5.07563

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00394	0.00433	0.01102
	OE	0.00000	0.00000	0.00000
	OE	0.00386	0.00457	0.03703
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00303	0.00333	0.01330
	OE	0.00000	0.00000	0.00000
	OE	0.00284	0.00387	0.04171

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00053	-0.00020	0.00374
	OE	0.00000	0.00000	0.00000
	OE	0.00239	0.00317	0.04064
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00018	0.00336
	OE	0.00000	0.00000	0.00000
	OE	0.00169	0.00279	0.04410

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00187	-0.00188	-0.00187
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00166	-0.00170	-0.00167
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00135	-0.00137	-0.00135
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00120	-0.00122	-0.00121

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00187	0.00188	0.00187
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00170	0.00171	0.00167
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00135	0.00137	0.00135
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00122	0.00123	0.00121

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00143	0.00230	0.04031
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00127	0.00212	0.04013
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00102	0.00220	0.04405
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00087	0.00204	0.04387

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00476	0.00618	0.04387
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00482	0.00620	0.04395
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00367	0.00528	0.04716
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00367	0.00533	0.04722

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	OE	Y
0	0	1
1	0	0
-	1	HiZ

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tnbufi_1	8.30280
sky130_osu_sc_12T_hs__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tnbufi_1	0.00298	0.00443	0.64913
sky130_osu_sc_12T_hs__tnbufi_l	0.00222	0.00338	0.45047

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.02442	0.03044
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.37109	0.44561

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (FR)	0.04143	0.79979	10.68280
	OE->Y (RR)	0.02271	0.30466	5.09346
	OE->Y (FR)	0.05058	0.79870	10.35400
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.04764	0.84769	10.18430
	OE->Y (RR)	0.02406	0.30444	5.09324
	OE->Y (FR)	0.05505	0.85817	9.98486

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (RF)	0.02369	0.45614	6.09674
	OE->Y (RF)	0.02250	0.30467	5.09349
	OE->Y (FF)	0.04651	0.43309	4.57069
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.02477	0.46714	5.69646
	OE->Y (RF)	0.02381	0.30444	5.09324
	OE->Y (FF)	0.05067	0.43725	4.16147

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00410	0.00448	0.01116
	OE	0.00000	0.00000	0.00000
	OE	0.00979	0.01138	0.04944
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00310	0.00338	0.01337
	OE	0.00000	0.00000	0.00000
	OE	0.00751	0.00942	0.05131

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00073	-0.00054	0.00356
	OE	0.00000	0.00000	0.00000
	OE	0.00849	0.01026	0.04346
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00052	-0.00038	0.00315
	OE	0.00000	0.00000	0.00000
	OE	0.00653	0.00863	0.04724

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00154	-0.00155	-0.00154
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00135	-0.00138	-0.00135
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00106	-0.00107	-0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00092	-0.00093	-0.00092

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00154	0.00155	0.00154
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00137	0.00138	0.00135
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00106	0.00107	0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00094	0.00095	0.00094

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00248	-0.00193	0.03646
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00249	-0.00185	0.03647
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00164	-0.00070	0.04125
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00174	-0.00073	0.04126

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00736	0.00910	0.04746
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00727	0.00893	0.04740
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00570	0.00783	0.04984
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00565	0.00763	0.04978

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xnor2_l	0.00599	0.00511	0.67226

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.05365	0.08284

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (RR)	B	0.08736	0.65809	6.31338
	A->Y (FR)	!B	0.05430	0.81409	10.79380
	B->Y (RR)	A	0.07081	0.64316	6.37353
	B->Y (FR)	!A	0.06771	0.81565	10.50280

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (FF)	B	0.07800	0.50023	4.90077
	A->Y (RF)	!B	0.03289	0.43490	5.63765
	B->Y (FF)	A	0.06911	0.49200	4.90146
	B->Y (RF)	!A	0.03983	0.44456	5.64195

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00406	0.00457	0.03832
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00987	0.01155	0.05599
	B	A	0.00000	0.00000	0.00000
	B	A	0.00168	0.00260	0.04083
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01047	0.01173	0.05313

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01183	0.01282	0.04996
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00270	0.00339	0.04443
	B	A	0.00000	0.00000	0.00000
	B	A	0.01073	0.01230	0.05033
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00353	0.00417	0.04488

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xor2_1	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xor2_1	0.00600	0.00515	0.64323

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.05365	0.07727

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (RR)	!B	0.09038	0.67239	6.47578
	A->Y (FR)	B	0.07136	0.83839	10.67410
	B->Y (RR)	!A	0.07503	0.66741	6.48556
	B->Y (FR)	A	0.07688	0.84381	10.66130

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (FF)	!B	0.07497	0.49266	4.69284
	A->Y (RF)	B	0.03366	0.47071	6.06830
	B->Y (FF)	!A	0.07153	0.49224	4.79520
	B->Y (RF)	A	0.03880	0.43781	5.46883

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01160	0.01275	0.05305
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00238	0.00234	0.03874
	B	A	0.00000	0.00000	0.00000
	B	A	0.01173	0.01296	0.05266
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00161	0.00239	0.03960

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00223	0.00268	0.04279
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01240	0.01380	0.04630
	B	A	0.00000	0.00000	0.00000
	B	A	0.00227	0.00277	0.04187
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01084	0.01245	0.04948

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tiehi	4.39560
sky130_osu_sc_12T_hs__tielo	4.39560

Pin Capacitance Information

Cell Name	Max Cap(pf)
	Y
sky130_osu_sc_12T_hs__tiehi	2.94347
sky130_osu_sc_12T_hs__tielo	6.01481

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000	0.00000	0.00000