sky130_osu_sc_12T_hs_tt_1P68_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_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.01087	0.01090	0.00839	1.17611	0.51439	1.04497
sky130_osu_sc_12T_hs__addf_l	0.01087	0.01090	0.00841	0.80713	0.51540	1.04631

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.05363	0.06535
sky130_osu_sc_12T_hs__addf_l	0.00000	0.18998	0.33993

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)	0.13404	1.51401	21.94480
	B->CO (RR)	0.12941	1.48978	21.69340
	CI->CO (RR)	0.12626	1.55077	22.70650
	CON->CO (FR)	0.02558	0.72757	11.40280
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.13320	1.39658	17.69970
	B->CO (RR)	0.12873	1.38552	17.78050
	CI->CO (RR)	0.12534	1.43393	18.48830
	CON->CO (FR)	0.03007	0.77018	10.94770

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)	0.21943	2.12339	30.27220
	B->CO (FF)	0.19497	2.02769	29.11610
	CI->CO (FF)	0.19239	2.10093	30.49630
	CON->CO (RF)	0.01835	0.48845	7.64481
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.21466	1.87934	23.39660
	B->CO (FF)	0.19069	1.79984	22.60040
	CI->CO (FF)	0.18762	1.85847	23.64690
	CON->CO (RF)	0.01973	0.49807	7.16273

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)	0.18008	1.00963	10.82690
	B->CON (FR)	0.15569	0.95082	10.48130
	CI->CON (FR)	0.15302	0.98937	11.11250
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.17109	1.00148	10.83170
	B->CON (FR)	0.14745	0.94336	10.48580
	CI->CON (FR)	0.14400	0.98140	11.11720

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)	0.07878	0.48998	5.36099
	B->CON (RF)	0.07567	0.51428	5.84275
	CI->CON (RF)	0.07094	0.52916	6.14148
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.07647	0.48791	5.36482
	B->CON (RF)	0.07347	0.51242	5.84695
	CI->CON (RF)	0.06862	0.52714	6.14589

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)	0.31798	1.99001	24.18390
	B->S (-R)	0.31777	1.96823	23.50780
	CI->S (-R)	0.28858	1.96312	24.40600
	CON->S (RR)	0.07849	0.63837	6.84343
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.30653	1.98239	24.20150
	B->S (-R)	0.30649	1.96106	23.52380
	CI->S (-R)	0.27713	1.95561	24.42330
	CON->S (RR)	0.07853	0.63872	6.85220

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)	0.23183	1.27091	14.04210
	B->S (-F)	0.22802	1.23692	14.06750
	CI->S (-F)	0.22352	1.30379	14.81550
	CON->S (FF)	0.10112	0.60074	5.69673
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.22659	1.26800	14.05250
	B->S (-F)	0.22306	1.23405	14.08330
	CI->S (-F)	0.21828	1.30140	14.82570
	CON->S (FF)	0.10115	0.60090	5.70136

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	0.00209	0.00232	0.00746
	B	0.00304	0.00316	0.00754
	CI	0.00304	0.00334	0.00854
sky130_osu_sc_12T_hs__addf_l	A	0.00187	0.00204	0.00612
	B	0.00281	0.00288	0.00667
	CI	0.00281	0.00306	0.00733

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00759	0.00813	0.02087
	B	0.00795	0.00846	0.01968
	CI	0.00643	0.00708	0.02013
sky130_osu_sc_12T_hs__addf_l	A	0.00741	0.00779	0.01611
	B	0.00776	0.00810	0.01535
	CI	0.00625	0.00669	0.01550

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00758	0.00788	0.01333
	B	0.00790	0.00808	0.01299
	CI	0.00642	0.00676	0.01277
sky130_osu_sc_12T_hs__addf_l	A	0.00741	0.00768	0.01295
	B	0.00771	0.00787	0.01263
	CI	0.00625	0.00655	0.01239

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00249	0.00242	0.00476
	B	0.00301	0.00303	0.00569
	CI	0.00303	0.00323	0.00627
sky130_osu_sc_12T_hs__addf_l	A	0.00227	0.00218	0.00471
	B	0.00278	0.00281	0.00566
	CI	0.00281	0.00301	0.00623

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00759	0.00810	0.01943
	B	0.00794	0.00838	0.01832
	CI	0.00643	0.00699	0.01863
sky130_osu_sc_12T_hs__addf_l	A	0.00741	0.00788	0.01884
	B	0.00776	0.00817	0.01774
	CI	0.00625	0.00677	0.01803

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01649	0.01649	0.02480
	B	0.01511	0.01489	0.02639
	CI	0.01358	0.01338	0.02124
sky130_osu_sc_12T_hs__addf_l	A	0.01649	0.01649	0.02480
	B	0.01511	0.01490	0.02640
	CI	0.01359	0.01338	0.02124

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00543	0.00571	1.13592	1.16326	1.17680
sky130_osu_sc_12T_hs__addh_l	0.00530	0.00563	0.79798	1.16631	0.81512

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.05262	0.05579
sky130_osu_sc_12T_hs__addh_l	0.00000	0.33177	0.33507

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)	0.10999	0.71136	7.36884
	B->CO (RR)	0.11326	0.70817	7.43939
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.09174	0.67998	6.52434
	B->CO (RR)	0.09440	0.67163	6.53745

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)	0.09348	0.64178	6.51040
	B->CO (FF)	0.09858	0.65930	6.56335
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.08228	0.58325	5.55338
	B->CO (FF)	0.08693	0.59769	5.61648

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)	0.15407	0.73465	7.33323
	B->CON (RR)	0.15708	0.73015	7.40349
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.12366	0.64470	6.64408
	B->CON (RR)	0.12603	0.63427	6.66858

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)	0.12592	0.66632	6.60596
	B->CON (FF)	0.12438	0.67781	6.65063
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.10368	0.58333	5.96417
	B->CON (FF)	0.10291	0.59288	6.01242

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)	0.17539	1.40747	17.57050
	B->S (FR)	0.17387	1.41842	17.66190
	CON->S (FR)	0.02786	0.73653	11.54980
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.15010	1.22845	13.64980
	B->S (FR)	0.14944	1.23847	13.71340
	CON->S (FR)	0.03079	0.77453	11.05010

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)	0.19754	1.40504	17.28760
	B->S (RF)	0.20048	1.40080	17.36690
	CON->S (RF)	0.02133	0.57171	9.03034
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.15853	1.08346	11.28610
	B->S (RF)	0.16086	1.07274	11.31380
	CON->S (RF)	0.01926	0.49863	7.23794

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	0.00402	0.00387	0.00611
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00351	0.00572
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00344	0.00332	0.00783
	B	0.00000	0.00000	0.00000
	B	0.00311	0.00294	0.00784

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	0.00559	0.00545	0.00836
	B	0.00000	0.00000	0.00000
	B	0.00587	0.00597	0.00899
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00505	0.00500	0.01041
	B	0.00000	0.00000	0.00000
	B	0.00531	0.00549	0.01101

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	0.00402	0.00387	0.00612
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00351	0.00573
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00344	0.00332	0.00774
	B	0.00000	0.00000	0.00000
	B	0.00311	0.00294	0.00778

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	0.00559	0.00545	0.00829
	B	0.00000	0.00000	0.00000
	B	0.00587	0.00597	0.00885
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00504	0.00499	0.01025
	B	0.00000	0.00000	0.00000
	B	0.00531	0.00549	0.01087

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	0.00560	0.00546	0.00851
	B	0.00000	0.00000	0.00000
	B	0.00587	0.00598	0.00912
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00505	0.00501	0.01048
	B	0.00000	0.00000	0.00000
	B	0.00532	0.00550	0.01099

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	0.00402	0.00386	0.00627
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00351	0.00569
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00344	0.00332	0.00777
	B	0.00000	0.00000	0.00000
	B	0.00312	0.00294	0.00789

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)	1.08756	1.04191	0.31881
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.09081	1.04507	0.31964

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)	1.08746	1.04174	0.32840
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.09074	1.04487	0.32908

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00285	0.00297	1.14969
sky130_osu_sc_12T_hs__and2_2	0.00285	0.00297	2.27846
sky130_osu_sc_12T_hs__and2_4	0.00285	0.00297	4.37810
sky130_osu_sc_12T_hs__and2_6	0.00288	0.00297	6.52477
sky130_osu_sc_12T_hs__and2_8	0.00285	0.00297	8.49336
sky130_osu_sc_12T_hs__and2_l	0.00220	0.00228	0.80476

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.02568	0.04038
sky130_osu_sc_12T_hs__and2_2	0.00000	0.04038	0.04393
sky130_osu_sc_12T_hs__and2_4	0.00000	0.06977	0.07720
sky130_osu_sc_12T_hs__and2_6	0.00000	0.09917	0.11402
sky130_osu_sc_12T_hs__and2_8	0.00000	0.12856	0.15084
sky130_osu_sc_12T_hs__and2_l	0.00000	0.36751	0.58766

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)	0.07083	0.57978	6.60956
	B->Y (RR)	0.07514	0.57813	6.51618
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.07872	0.51483	6.66249
	B->Y (RR)	0.08300	0.50796	6.56543
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.10667	0.51435	6.83507
	B->Y (RR)	0.11094	0.49926	6.73079
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.13470	0.54449	7.08197
	B->Y (RR)	0.13884	0.52350	6.97445
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.16181	0.57587	7.23256
	B->Y (RR)	0.16609	0.55315	7.10711
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.07317	0.63518	6.65060
	B->Y (RR)	0.07741	0.63203	6.51866

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)**	0.06623	0.51694	5.53239
	B->Y (FF)	0.06843	0.52832	5.58531
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.07694	0.50235	5.68230
	B->Y (FF)	0.07849	0.50944	5.73059
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.10808	0.53489	5.92977
	B->Y (FF)	0.10740	0.53631	5.96068
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.14128	0.57566	6.19293
	B->Y (FF)	0.13813	0.57484	6.21924
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.17243	0.61391	6.31004
	B->Y (FF)	0.16718	0.60794	6.32745
sky130_osu_sc_12T_hs__and2_l	**A->Y (FF)**	0.06637	0.50691	4.96738
	B->Y (FF)	0.07221	0.52350	5.03565

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	0.00263	0.00265	0.01903
	B	0.00000	0.00000	0.00000
	B	0.00268	0.00240	0.01338
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00496	0.00510	0.02079
	B	0.00000	0.00000	0.00000
	B	0.00501	0.00509	0.01557
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01036	0.01084	0.02526
	B	0.00000	0.00000	0.00000
	B	0.01041	0.01072	0.02051
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01604	0.01655	0.03051
	B	0.00000	0.00000	0.00000
	B	0.01610	0.01651	0.02584
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02184	0.02230	0.03604
	B	0.00000	0.00000	0.00000
	B	0.02190	0.02230	0.03196
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00208	0.00226	0.02270
	B	0.00000	0.00000	0.00000
	B	0.00212	0.00205	0.01766

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	0.00679	0.00738	0.02225
	B	0.00000	0.00000	0.00000
	B	0.00771	0.00811	0.02244
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00856	0.00940	0.02424
	B	0.00000	0.00000	0.00000
	B	0.00951	0.01011	0.02445
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01312	0.01437	0.02915
	B	0.00000	0.00000	0.00000
	B	0.01406	0.01506	0.02925
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01813	0.01968	0.03428
	B	0.00000	0.00000	0.00000
	B	0.01891	0.02009	0.03417
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02339	0.02436	0.03902
	B	0.00000	0.00000	0.00000
	B	0.02415	0.02497	0.03888
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00523	0.00601	0.02530
	B	0.00000	0.00000	0.00000
	B	0.00592	0.00663	0.02540

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)	-0.00235	-0.00236	-0.00237
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00234	-0.00236	-0.00237
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00234	-0.00236	-0.00237
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00236	-0.00238	-0.00240
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00234	-0.00237	-0.00237
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00166	-0.00166	-0.00167

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)	0.00237	0.00240	0.00238
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00237	0.00240	0.00238
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00237	0.00240	0.00238
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00239	0.00242	0.00240
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00237	0.00239	0.00238
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00167	0.00169	0.00168

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)	-0.00224	-0.00224	-0.00224
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00224	-0.00225	-0.00224
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00224	-0.00225	-0.00224
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00224	-0.00225	-0.00224
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00224	-0.00225	-0.00224
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00158	-0.00159	-0.00158

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)	0.00230	0.00227	0.00225
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00230	0.00227	0.00225
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00230	0.00228	0.00225
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00230	0.00228	0.00225
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00230	0.00227	0.00225
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00163	0.00161	0.00159

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00261	0.00279	0.00278	0.49276

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.01077	0.01841

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)	0.09117	0.93434	10.72650
	A1->Y (FR)	0.07317	0.85569	10.12320
	B0->Y (FR)	0.06948	0.92362	11.11730

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)	0.03946	0.43730	5.10435
	A1->Y (RF)	0.03612	0.46629	5.64671
	B0->Y (RF)	0.02380	0.42787	5.35172

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	0.00572	0.00563	0.00719
	A1	0.00000	0.00000	0.00000
	A1	0.00480	0.00469	0.00621
	B0	0.00356	0.00370	0.00671

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	0.00122	0.00103	0.00252
	A1	0.00000	0.00000	0.00000
	A1	0.00125	0.00110	0.00294
	B0	-0.00046	-0.00035	0.00131

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)	-0.00167	-0.00192	-0.00192
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00195	-0.00196	-0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00195	-0.00196	-0.00195

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)	0.00192	0.00193	0.00192
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00195	0.00197	0.00196
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00201	0.00197	0.00196

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)	-0.00167	-0.00193	-0.00193
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00195	-0.00197	-0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00215	-0.00216	-0.00217

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)	0.00192	0.00194	0.00193
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00195	0.00197	0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00216	0.00221	0.00217

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)	-0.00093	-0.00094	-0.00093

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)	0.00102	0.00103	0.00095

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00261	0.00279	0.00292	0.00274	0.48177

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.01310	0.03682

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)	0.11622	0.95899	10.64210
	A1->Y (FR)	0.10390	0.94116	10.58540
	B0->Y (FR)	0.07288	0.91434	10.97640
	B1->Y (FR)	0.08560	0.93683	11.04610

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)	0.05137	0.44823	5.04785
	A1->Y (RF)	0.04798	0.47699	5.58657
	B0->Y (RF)	0.02848	0.45296	5.55572
	B1->Y (RF)	0.03225	0.42437	5.01980

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	0.00689	0.00680	0.00787
	A1	0.00598	0.00586	0.00731
	B0	0.00384	0.00393	0.00742
	B1	0.00479	0.00490	0.00821

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00244	0.00226	0.00377
	A1	0.00246	0.00237	0.00419
	B0	-0.00030	-0.00027	0.00163
	B1	-0.00025	-0.00030	0.00124

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)	-0.00171	-0.00192	-0.00192
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00195	-0.00196	-0.00195
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00195	-0.00196	-0.00195
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00195	-0.00196	-0.00195

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)	0.00192	0.00192	0.00192
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00195	0.00197	0.00196
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00201	0.00197	0.00196
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00201	0.00196	0.00196

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)	-0.00170	-0.00194	-0.00193
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00195	-0.00197	-0.00196
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00214	-0.00215	-0.00216
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00214	-0.00215	-0.00216

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)	0.00191	0.00195	0.00193
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00195	0.00197	0.00197
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00215	0.00218	0.00217
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00215	0.00218	0.00217

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)	-0.00092	-0.00093	-0.00092
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00092	-0.00092	-0.00092
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00224	-0.00226	-0.00226
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00224	-0.00226	-0.00226

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)	0.00106	0.00107	0.00096
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00092	0.00092	0.00092
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00225	0.00227	0.00227
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00225	0.00227	0.00227

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)	-0.00094	-0.00094	-0.00094
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00093	-0.00094	-0.00094
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00206	-0.00207	-0.00206
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00206	-0.00206	-0.00206

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)	0.00107	0.00108	0.00097
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00093	0.00094	0.00094
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00212	0.00208	0.00207
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00212	0.00208	0.00207

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00297	1.06237
sky130_osu_sc_12T_hs__buf_2	0.00297	2.18704
sky130_osu_sc_12T_hs__buf_4	0.00296	4.32542
sky130_osu_sc_12T_hs__buf_6	0.00083	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00297	8.60210
sky130_osu_sc_12T_hs__buf_l	0.00225	0.80966

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.02197	0.02197
sky130_osu_sc_12T_hs__buf_2	0.00000	0.03295	0.04038
sky130_osu_sc_12T_hs__buf_4	0.00000	0.05491	0.07720
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.09884	0.15084
sky130_osu_sc_12T_hs__buf_l	0.00000	0.29466	0.29466

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)**	0.05567	0.56008	6.34407
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.05827	0.47612	6.36387
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.07728	0.46003	6.58571
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.11490	0.49979	7.03582
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.05704	0.60403	6.44909

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)**	0.06212	0.49654	5.23028
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.07302	0.49045	5.53609
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.10404	0.52751	5.88999
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.16772	0.60924	6.38024
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.06421	0.50342	5.02117

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	0.00253	0.00248	0.01359
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00482	0.00494	0.01615
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01011	0.01059	0.02159
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02108	0.02203	0.03293
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00200	0.00216	0.01989

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	0.00658	0.00712	0.02127
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00832	0.00905	0.02307
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01288	0.01388	0.02776
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02313	0.02365	0.03726
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00515	0.00596	0.02564

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
	-0.00058	-0.00058	-0.00056

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
	0.00058	0.00058	0.00056

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00273	0.00272	0.00863	1.13174	1.12896
sky130_osu_sc_12T_hs__dffr_l	0.00273	0.00272	0.00862	0.81336	0.80657

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.22095	0.45869
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.49365	0.73139

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)	0.29599	1.26754	13.44720
	QN->Q (FR)	0.02959	0.80293	12.45420
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.28999	1.32047	12.67480
	QN->Q (FR)	0.03240	0.82508	11.72910

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)	0.29329	1.29744	14.25120
	QN->Q (RF)	0.01992	0.52879	8.25406
	RN->Q (FF)	0.21635	1.36121	16.18820
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.29601	1.40834	14.00140
	QN->Q (RF)	0.02088	0.53608	7.79246
	RN->Q (FF)	0.21945	1.47077	15.92950

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)	0.26418	0.77795	6.56401
	RN->QN (FR)	0.18713	0.84149	8.50229
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.26311	0.83246	6.50889
	RN->QN (FR)	0.18637	0.89529	8.43659

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)**	0.25043	0.60803	3.73586
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.24227	0.60796	3.42204

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)	-0.05383	-0.06806	-0.02682
	setup	CK (R)	0.22485	0.25363	1.00178
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.05396	-0.06827	-0.02799
	setup	CK (R)	0.22578	0.25420	0.99745

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)	-0.12610	-0.33146	-3.70896
	setup	CK (R)	0.14783	0.34223	3.82754
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.12734	-0.33378	-3.71377
	setup	CK (R)	0.14783	0.34223	3.82754

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)	-0.05383	-0.06806	-0.02682
	setup	CK (R)	0.22485	0.25363	1.00178
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.05396	-0.06827	-0.02799
	setup	CK (R)	0.22578	0.25420	0.99745

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)	-0.12610	-0.33146	-3.70896
	setup	CK (R)	0.14783	0.34223	3.82754
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.12734	-0.33378	-3.71377
	setup	CK (R)	0.14783	0.34223	3.82754

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)	0.19638	0.22699	1.14420
	removal	CK (R)	-0.04232	-0.04896	-0.07275
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.19903	0.22673	1.14157
	removal	CK (R)	-0.04232	-0.04896	-0.07275

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)	0.19638	0.22699	1.14420
	removal	CK (R)	-0.04232	-0.04896	-0.07275
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.19903	0.22673	1.14157
	removal	CK (R)	-0.04232	-0.04896	-0.07275

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 ()	0.13390	0.40161	13.33370
	min_pulse_width	RN ()	0.13390	0.40161	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.13085	0.40161	13.33370
	min_pulse_width	RN ()	0.13085	0.40161	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 ()	0.13390	0.40161	13.33370
	min_pulse_width	CK ()	0.15215	0.40161	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.12477	0.40161	13.33370
	min_pulse_width	CK ()	0.14911	0.40161	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 ()	0.29513	0.40161	13.33370
	min_pulse_width	CK ()	0.12173	0.40161	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.29818	0.40161	13.33370
	min_pulse_width	CK ()	0.12173	0.40161	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	0.00678	0.00558	0.00242
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00615	0.00527	0.00959

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	0.00769	0.00663	0.00244
	RN	-0.00086	-0.05194	-0.79856
	RN	0.01750	0.01667	0.01280
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00705	0.00631	0.00841
	RN	-0.00086	-0.04260	-0.57390
	RN	0.01685	0.01635	0.01888

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	0.00769	0.00663	0.00241
	RN	-0.00086	-0.05186	-0.79660
	RN	0.01750	0.01667	0.01282
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00705	0.00632	0.00854
	RN	-0.00086	-0.04238	-0.56912
	RN	0.01686	0.01635	0.01893

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	0.00675	0.00556	0.00204
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00611	0.00524	0.00920

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	-0.00161	-0.00193	-0.00195
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00851	0.00814	0.01806
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00343	0.00315	0.01315
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00160	-0.00193	-0.00195
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00851	0.00815	0.01807
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00343	0.00315	0.01315

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	0.00193	0.00196	0.00195
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01275	0.01256	0.02287
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00626	0.00609	0.01611
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00194	0.00196	0.00195
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01276	0.01256	0.02287
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00627	0.00609	0.01611

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)	0.00264	0.00251	0.01951
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00792	0.00760	0.02519
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)	0.00265	0.00251	0.01951
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00793	0.00761	0.02519

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)	0.00682	0.00706	0.02456
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01343	0.01346	0.03110
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)	0.00683	0.00707	0.02456
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01344	0.01347	0.03111

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)	-0.00048	-0.00081	0.01623
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00432	0.00350	0.02103
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00051	-0.00080	0.01621
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00048	-0.00081	0.01624
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00432	0.00350	0.02104
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00051	-0.00079	0.01621

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)	0.01037	0.01052	0.02826
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02109	0.02077	0.04043
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01575	0.01577	0.03334
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02060	0.02083	0.05168
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01109	0.01121	0.02864
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01037	0.01052	0.02826
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02109	0.02077	0.04043
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01575	0.01577	0.03335
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02061	0.02087	0.05169
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01109	0.01121	0.02864

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00270	0.00273	0.00636	0.00872	1.17923	1.18407
sky130_osu_sc_12T_hs__dffsr_l	0.00270	0.00273	0.00636	0.00872	0.80218	0.80688

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.08188	0.10579
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.35457	0.37849

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)	0.31812	1.30728	13.84260
	QN->Q (FR)	0.02780	0.77675	12.18790
	RN->Q (RR)	0.25546	1.25388	13.87230
	SN->Q (FR)	0.24199	1.36695	15.99780
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.31666	1.35139	12.58010
	QN->Q (FR)	0.03233	0.82035	11.62760
	RN->Q (RR)	0.25471	1.30070	12.60950
	SN->Q (FR)	0.24046	1.41096	14.71810

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)	0.33721	1.35105	14.58450
	QN->Q (RF)	0.01977	0.53539	8.43169
	RN->Q (FF)	0.22898	1.38342	16.52340
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.34123	1.44980	13.86040
	QN->Q (RF)	0.02076	0.53306	7.72724
	RN->Q (FF)	0.23344	1.48330	15.78420

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)	0.30768	0.82510	6.69504
	RN->QN (FR)	0.19980	0.85827	8.63058
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.30780	0.88347	6.57062
	RN->QN (FR)	0.20045	0.91692	8.49600

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)	0.27450	0.64993	4.00455
	RN->QN (RF)	0.21303	0.59943	4.03316
	SN->QN (FF)	0.19898	0.71096	6.15667
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.26981	0.64693	3.50495
	RN->QN (RF)	0.20832	0.59648	3.53150
	SN->QN (FF)	0.19421	0.70715	5.64716

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)	-0.06412	-0.07824	-0.07750
	setup	CK (R)	0.24077	0.25892	1.19101
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.06395	-0.07663	-0.07425
	setup	CK (R)	0.24095	0.25920	1.18632

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)	-0.14321	-0.34947	-3.44705
	setup	CK (R)	0.17237	0.35941	3.89097
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.14593	-0.34845	-3.40617
	setup	CK (R)	0.17237	0.35941	3.89101

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)	-0.06412	-0.07824	-0.07750
	setup	CK (R)	0.24077	0.25892	1.19101
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.06395	-0.07663	-0.07425
	setup	CK (R)	0.24095	0.25920	1.18632

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)	-0.14321	-0.34947	-3.44705
	setup	CK (R)	0.17237	0.35941	3.89097
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.14593	-0.34845	-3.40617
	setup	CK (R)	0.17237	0.35941	3.89101

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)	0.19172	0.21274	1.20604
	removal	CK (R)	-0.02897	-0.03942	-0.08122
	hold	SN (R)	-0.19072	-0.32520	-1.45679
	setup	SN (R)	0.21455	0.35555	6.55018
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.18871	0.21294	1.20298
	removal	CK (R)	-0.02897	-0.03942	-0.08122
	hold	SN (R)	-0.18249	-0.31715	-1.41998
	setup	SN (R)	0.21378	0.34933	6.42910

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)	0.19172	0.21274	1.20604
	removal	CK (R)	-0.02897	-0.03942	-0.08122
	hold	SN (R)	-0.19072	-0.32531	-1.45679
	hold	SN (R)	-0.19109	-0.32520	-1.46389
	setup	SN (R)	0.21455	0.35390	6.28852
	setup	SN (R)	0.21304	0.35555	6.55018
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.18871	0.21294	1.20298
	removal	CK (R)	-0.02897	-0.03942	-0.08122
	hold	SN (R)	-0.18249	-0.31730	-1.41998
	hold	SN (R)	-0.18409	-0.31715	-1.43001
	setup	SN (R)	0.21378	0.34530	6.09817
	setup	SN (R)	0.20240	0.34933	6.42910

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 ()	0.15519	0.40161	13.33370
	min_pulse_width	RN ()	0.16128	0.40161	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.15519	0.40161	13.33370
	min_pulse_width	RN ()	0.15519	0.40161	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)	0.03810	0.06643	6.87671
	removal	CK (R)	-0.01430	-0.04871	-0.28354
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.03786	0.06635	6.82876
	removal	CK (R)	-0.01430	-0.04871	-0.28354

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)	0.03810	0.06643	6.87671
	removal	CK (R)	-0.01430	-0.04871	-0.28354
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.03786	0.06635	6.82876
	removal	CK (R)	-0.01430	-0.04871	-0.28354

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 ()	0.19474	0.40161	13.33370
	min_pulse_width	SN ()	0.20083	0.40161	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.19474	0.40161	13.33370
	min_pulse_width	SN ()	0.18866	0.40161	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 ()	0.14302	0.40161	13.33370
	min_pulse_width	CK ()	0.17344	0.40161	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.13694	0.40161	13.33370
	min_pulse_width	CK ()	0.17040	0.40161	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 ()	0.31034	0.40161	13.33370
	min_pulse_width	CK ()	0.14911	0.40161	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.31034	0.40161	13.33370
	min_pulse_width	CK ()	0.14911	0.40161	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	0.00841	0.00715	0.00304
	RN	0.01538	0.01421	0.00540
	SN	-0.00086	-0.05323	-0.83206
	SN	0.01713	0.01574	0.00634
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00782	0.00691	0.01107
	RN	0.01477	0.01396	0.01375
	SN	-0.00086	-0.04225	-0.56602
	SN	0.01653	0.01551	0.01452

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	0.00892	0.00817	0.00729
	RN	-0.00086	-0.05323	-0.83206
	RN	0.01840	0.01779	0.01720
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00828	0.00762	0.00986
	RN	-0.00086	-0.04225	-0.56602
	RN	0.01776	0.01724	0.01989

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	0.00892	0.00817	0.00712
	RN	-0.00086	-0.05336	-0.83548
	RN	0.01841	0.01778	0.01711
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00828	0.00762	0.00989
	RN	-0.00086	-0.04239	-0.56933
	RN	0.01776	0.01723	0.01988

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	0.00837	0.00711	0.00261
	RN	0.01534	0.01417	0.00527
	SN	-0.00086	-0.05336	-0.83541
	SN	0.01709	0.01571	0.00610
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00777	0.00687	0.01060
	RN	0.01473	0.01392	0.01329
	SN	-0.00086	-0.04239	-0.56930
	SN	0.01649	0.01545	0.01437

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	-0.00192	-0.00196	-0.00196
	(!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)	0.01065	0.01031	0.02009
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00375	0.00347	0.01333
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00371	0.00345	0.01332
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00375	0.00348	0.01335
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00192	-0.00195	-0.00196
	(!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)	0.01065	0.01032	0.02010
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00375	0.00348	0.01333
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00372	0.00345	0.01332
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00376	0.00348	0.01335

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	0.00200	0.00197	0.00196
	(!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)	0.01470	0.01445	0.02430
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00679	0.00665	0.01658
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00684	0.00670	0.01659
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00676	0.00662	0.01654
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00201	0.00197	0.00196
	(!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)	0.01471	0.01445	0.02431
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00679	0.00665	0.01658
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00684	0.00670	0.01659
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00676	0.00663	0.01654

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)	0.00214	0.00199	0.01884
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00934	0.00893	0.02589
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)	0.00215	0.00199	0.01884
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00934	0.00893	0.02590

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)	0.00740	0.00770	0.02530
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01420	0.01420	0.03172
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)	0.00741	0.00770	0.02530
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01420	0.01420	0.03172

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)	-0.00498	-0.00500	-0.00502
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00490	-0.00539	-0.00542
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00478	-0.00503	-0.00504
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00245	0.00220	0.01264
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)	-0.00498	-0.00500	-0.00502
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00489	-0.00538	-0.00542
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00477	-0.00503	-0.00503
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00246	0.00219	0.01265

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)	0.00500	0.00512	0.00503
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00541	0.00544	0.00542
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00503	0.00510	0.00504
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01147	0.01114	0.02058
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)	0.00501	0.00512	0.00503
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00541	0.00545	0.00542
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00503	0.00510	0.00504
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01147	0.01114	0.02059

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)	-0.00054	-0.00088	0.01614
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00503	0.00426	0.02177
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00495	0.00417	0.02172
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00039	-0.00071	0.01628
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00254	0.00209	0.03399
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00053	-0.00087	0.01614
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00503	0.00427	0.02177
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00495	0.00417	0.02172
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00039	-0.00071	0.01629
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00254	0.00209	0.03399

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)	0.02351	0.02322	0.04267
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01056	0.01070	0.02842
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01600	0.01599	0.03356
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01607	0.01606	0.03377
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02263	0.02274	0.05338
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01110	0.01120	0.02862
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01404	0.01432	0.04720
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02351	0.02322	0.04267
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01056	0.01070	0.02842
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01601	0.01599	0.03356
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01607	0.01607	0.03377
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02263	0.02276	0.05339
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01110	0.01120	0.02862
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01405	0.01433	0.04720

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00271	0.00531	0.00856	1.13527	1.13583
sky130_osu_sc_12T_hs__dffs_l	0.00271	0.00531	0.00856	0.81071	0.80965

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.44538	1.22250
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.71808	1.49520

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)	0.21867	1.17463	13.36370
	QN->Q (FR)	0.02957	0.80074	12.43210
	SN->Q (FR)	0.17459	1.28116	15.23730
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.21769	1.23187	12.52290
	QN->Q (FR)	0.03236	0.82190	11.67720
	SN->Q (FR)	0.17346	1.33504	14.36750

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)	0.32157	1.33105	14.29650
	QN->Q (RF)	0.01984	0.52714	8.24417
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.32198	1.43320	13.96210
	QN->Q (RF)	0.02082	0.53385	7.76099

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)	0.29167	0.81140	6.61836
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.28836	0.86203	6.55020

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)	0.17813	0.51812	3.65622
	SN->QN (FF)	0.13341	0.62480	5.52608
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.17452	0.52448	3.33959
	SN->QN (FF)	0.12972	0.62767	5.18807

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)	-0.03906	-0.05321	-0.00136
	setup	CK (R)	0.15495	0.18686	0.88154
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.03922	-0.05321	0.00036
	setup	CK (R)	0.15480	0.18715	0.87906

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)	-0.12726	-0.33356	-3.77595
	setup	CK (R)	0.16347	0.34659	3.84842
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.12772	-0.33250	-3.77508
	setup	CK (R)	0.16347	0.34659	3.84842

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)	-0.03906	-0.05321	-0.00136
	setup	CK (R)	0.15495	0.18686	0.88154
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.03922	-0.05321	0.00036
	setup	CK (R)	0.15480	0.18715	0.87906

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)	-0.12726	-0.33356	-3.77595
	setup	CK (R)	0.16347	0.34659	3.84842
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.12772	-0.33250	-3.77508
	setup	CK (R)	0.16347	0.34659	3.84842

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)	0.04077	0.06771	5.63416
	removal	CK (R)	-0.01776	-0.04871	-0.40726
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.04077	0.06763	5.39180
	removal	CK (R)	-0.01776	-0.04871	-0.40726

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)	0.04077	0.06771	5.63416
	removal	CK (R)	-0.01776	-0.04871	-0.40726
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.04077	0.06763	5.39180
	removal	CK (R)	-0.01776	-0.04871	-0.40726

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 ()	0.12173	0.40161	13.33370
	min_pulse_width	SN ()	0.12477	0.40161	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.11868	0.40161	13.33370
	min_pulse_width	SN ()	0.11868	0.40161	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 ()	0.08826	0.40161	13.33370
	min_pulse_width	CK ()	0.16128	0.40161	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.08522	0.40161	13.33370
	min_pulse_width	CK ()	0.15519	0.40161	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 ()	0.22820	0.40161	13.33370
	min_pulse_width	CK ()	0.13694	0.40161	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.22820	0.40161	13.33370
	min_pulse_width	CK ()	0.13694	0.40161	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	0.00679	0.00561	0.00273
	SN	-0.00086	-0.05203	-0.80104
	SN	0.01462	0.01379	0.01548
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00615	0.00529	0.00980
	SN	-0.00086	-0.04251	-0.57203
	SN	0.01397	0.01350	0.02270

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	0.00764	0.00664	0.00277
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00700	0.00631	0.00866

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	0.00764	0.00664	0.00271
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00700	0.00632	0.00872

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	0.00676	0.00560	0.00229
	SN	-0.00086	-0.05205	-0.80138
	SN	0.01459	0.01375	0.01529
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00611	0.00528	0.00935
	SN	-0.00086	-0.04248	-0.57126
	SN	0.01393	0.01345	0.02232

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	-0.00194	-0.00197	-0.00198
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00834	0.00800	0.01845
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00341	0.00312	0.01309
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00194	-0.00197	-0.00198
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00834	0.00800	0.01845
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00341	0.00313	0.01309

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	0.00204	0.00201	0.00199
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01261	0.01234	0.02248
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00628	0.00613	0.01621
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00205	0.00201	0.00200
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01261	0.01235	0.02248
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00628	0.00613	0.01621

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)	-0.00369	-0.00371	-0.00371
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00244	0.00221	0.02056
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)	-0.00368	-0.00370	-0.00370
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00245	0.00222	0.02057

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)	0.00373	0.00375	0.00371
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00805	0.00823	0.02804
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)	0.00373	0.00374	0.00371
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00805	0.00823	0.02803

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)	-0.00048	-0.00082	0.01624
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00044	-0.00074	0.01629
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00226	0.00184	0.03407
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00048	-0.00081	0.01625
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00044	-0.00074	0.01629
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00226	0.00184	0.03408

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)	0.02102	0.02075	0.04075
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01036	0.01053	0.02827
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02033	0.02043	0.05127
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01103	0.01114	0.02859
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01332	0.01368	0.04682
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02102	0.02076	0.04075
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01037	0.01053	0.02827
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02033	0.02043	0.05127
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01103	0.01115	0.02859
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01332	0.01368	0.04682

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00286	0.00848	1.03393
sky130_osu_sc_12T_hs__dff_l	0.00286	0.00847	0.76050

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.07371	0.08733
sky130_osu_sc_12T_hs__dff_l	0.00000	0.34641	0.36003

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)	0.18614	0.70679	6.42083
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.18483	0.75875	6.37964

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)	0.27572	0.60040	3.46577
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.27575	0.61788	3.29024

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)	-0.03752	-0.05384	-0.04043
	setup	CK (R)	0.12539	0.16189	0.85716
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.03755	-0.05384	-0.04086
	setup	CK (R)	0.12518	0.16251	0.85258

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)	-0.12086	-0.33297	-3.79365
	setup	CK (R)	0.14392	0.34394	3.85741
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.12052	-0.33293	-3.79393
	setup	CK (R)	0.14392	0.34394	3.85739

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 ()	0.07914	0.40161	13.33370
	min_pulse_width	CK ()	0.14607	0.40161	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.07609	0.40161	13.33370
	min_pulse_width	CK ()	0.14302	0.40161	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 ()	0.19474	0.40161	13.33370
	min_pulse_width	CK ()	0.11260	0.40161	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.19474	0.40161	13.33370
	min_pulse_width	CK ()	0.11260	0.40161	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	0.01425	0.01370	0.04010
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01292	0.01233	0.03880

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	0.01553	0.01490	0.03218
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01424	0.01364	0.03087

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	-0.00160	-0.00192	-0.00193
	!CK	0.00000	0.00000	0.00000
	!CK	0.00746	0.00713	0.01721
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00160	-0.00192	-0.00194
	!CK	0.00000	0.00000	0.00000
	!CK	0.00747	0.00713	0.01721

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	0.00192	0.00194	0.00193
	!CK	0.00000	0.00000	0.00000
	!CK	0.01299	0.01277	0.02314
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00192	0.00195	0.00194
	!CK	0.00000	0.00000	0.00000
	!CK	0.01299	0.01277	0.02314

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)	-0.00051	-0.00083	0.01624
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00045	-0.00074	0.01630
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00051	-0.00084	0.01624
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00045	-0.00074	0.01630

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)	0.01033	0.01052	0.02826
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02014	0.01987	0.04008
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02058	0.02075	0.05185
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01095	0.01109	0.02852
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01034	0.01052	0.02826
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02014	0.01987	0.04008
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02058	0.02075	0.05184
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01096	0.01109	0.02853

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00276	1.03301
sky130_osu_sc_12T_hs__inv_10	0.02459	10.37173
sky130_osu_sc_12T_hs__inv_2	0.00511	2.12443
sky130_osu_sc_12T_hs__inv_3	0.00757	3.10983
sky130_osu_sc_12T_hs__inv_4	0.00996	4.20209
sky130_osu_sc_12T_hs__inv_6	0.01491	6.26543
sky130_osu_sc_12T_hs__inv_8	0.01975	8.30396
sky130_osu_sc_12T_hs__inv_l	0.00220	0.72065

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.01098	0.01841
sky130_osu_sc_12T_hs__inv_10	0.00000	0.10982	0.18411
sky130_osu_sc_12T_hs__inv_2	0.00000	0.02196	0.03682
sky130_osu_sc_12T_hs__inv_3	0.00000	0.03295	0.05523
sky130_osu_sc_12T_hs__inv_4	0.00000	0.04393	0.07364
sky130_osu_sc_12T_hs__inv_6	0.00000	0.06589	0.11046
sky130_osu_sc_12T_hs__inv_8	0.00000	0.08786	0.14729
sky130_osu_sc_12T_hs__inv_l	0.00000	0.14733	0.29300

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)**	0.02863	0.73779	11.19080
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.03225	0.47911	11.18720
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.02083	0.62016	11.11690
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.02233	0.57701	11.13570
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.02193	0.54429	11.10780
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.02434	0.50998	11.11540
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.02797	0.49063	11.11550
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.03252	0.76402	10.57710

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)**	0.01828	0.46361	7.08090
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02356	0.29297	7.35223
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01451	0.40107	7.21846
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01564	0.37420	7.29336
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01536	0.34913	7.31177
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01815	0.32256	7.34002
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02082	0.30496	7.34374
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.01977	0.47857	6.69769

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	0.00334	0.00357	0.00387
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02698	0.03073	0.03375
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00569	0.00616	0.00966
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00877	0.00943	0.01708
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01113	0.01230	0.01903
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01645	0.01911	0.02861
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02171	0.02469	0.03820
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00265	0.00294	0.00742

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	-0.00056	-0.00043	0.00089
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	-0.00999	-0.00845	0.00611
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00188	-0.00156	0.00112
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00244	-0.00221	0.00207
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00383	-0.00337	0.00229
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00588	-0.00514	0.00353
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	-0.00795	-0.00677	0.00482
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00038	0.00086

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.25863	0.25862	0.00569	0.26031

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.02232	0.02232

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)	-	0.01109	0.20886	2.00363
	A1->Y (RR)	-	0.01324	0.21123	2.00492
	S0->Y (RR)	(!A0 * A1)	0.04017	0.25855	1.07382
	S0->Y (FR)	(A0 * !A1)	0.03089	0.37564	3.39715

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)	-	0.01325	0.22216	2.21947
	A1->Y (FF)	-	0.01176	0.21915	2.21285
	S0->Y (FF)	(!A0 * A1)	0.06052	0.35002	2.49323
	S0->Y (RF)	(A0 * !A1)	0.02018	0.25396	1.98693

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	-	-0.00336	-0.00335	-0.00337
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00215	-0.00215	-0.00216
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00438	0.00492	0.02325
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00210	-0.00216	0.01565

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	-	0.00336	0.00337	0.00337
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00215	0.00215	0.00216
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00059	0.00062	0.01872
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00905	0.00947	0.02735

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)	-0.00080	-0.00080	-0.00080

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)	0.00080	0.00080	0.00080

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)	-0.00095	-0.00095	-0.00095

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)	0.00095	0.00095	0.00095

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)	-0.00078	-0.00081	0.01720
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00075	-0.00080	0.01720

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)	0.00695	0.00729	0.02540
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00647	0.00689	0.02523

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00274	0.00275	1.02576
sky130_osu_sc_12T_hs__nand2_l	0.00216	0.00219	0.71863

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.01099	0.03682
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.14734	0.58600

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)	0.02985	0.73957	11.18100
	B->Y (FR)	0.03390	0.71115	10.72760
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.03287	0.76456	10.57500
	B->Y (FR)	0.03959	0.76962	10.56010

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)	0.02666	0.58670	8.82327
	B->Y (RF)	0.03037	0.55975	8.25254
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.02847	0.60651	8.33029
	B->Y (RF)	0.03207	0.57947	7.75846

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	0.00352	0.00372	0.00375
	B	0.00000	0.00000	0.00000
	B	0.00450	0.00465	0.00689
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00269	0.00296	0.00685
	B	0.00000	0.00000	0.00000
	B	0.00343	0.00364	0.00762

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	-0.00035	-0.00037	0.00088
	B	0.00000	0.00000	0.00000
	B	-0.00034	-0.00040	0.00062
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00022	-0.00024	0.00084
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00025	0.00064

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)	-0.00225	-0.00227	-0.00228
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00161	-0.00161	-0.00162

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)	0.00228	0.00230	0.00229
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00161	0.00163	0.00162

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)	-0.00210	-0.00210	-0.00210
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00150	-0.00151	-0.00150

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)	0.00216	0.00213	0.00211
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00154	0.00152	0.00151

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00271	0.00298	0.55027
sky130_osu_sc_12T_hs__nor2_l	0.00207	0.00229	0.39992

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00891	0.01841
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.09863	0.29299

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)	0.06465	0.88210	10.82880
	B->Y (FR)	0.05119	0.87213	11.00210
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.06828	0.93045	10.45450
	B->Y (FR)	0.05778	0.91224	10.46020

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)	0.02369	0.38647	4.84801
	B->Y (RF)	0.01938	0.37570	4.83321
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02394	0.39998	4.69121
	B->Y (RF)	0.02065	0.39115	4.67837

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	0.00463	0.00452	0.00620
	B	0.00000	0.00000	0.00000
	B	0.00364	0.00376	0.00707
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00341	0.00327	0.00575
	B	0.00000	0.00000	0.00000
	B	0.00278	0.00282	0.00855

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	0.00053	0.00041	0.00240
	B	0.00000	0.00000	0.00000
	B	-0.00044	-0.00026	0.00156
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00039	0.00033	0.00208
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00014	0.00146

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)	-0.00160	-0.00194	-0.00195
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00103	-0.00131	-0.00133

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)	0.00194	0.00195	0.00195
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00133	0.00134	0.00134

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)	-0.00093	-0.00094	-0.00093
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00065	-0.00066	-0.00065

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)	0.00098	0.00099	0.00095
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00068	0.00069	0.00066

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00275	0.00285	0.00242	0.54849

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.11562	0.31141

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)	0.07309	0.89341	11.02980
	A1->Y (FR)	0.08960	0.90989	10.85960
	B0->Y (FR)	0.04035	0.69142	9.06744

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)	0.03693	0.45709	5.54436
	A1->Y (RF)	0.04330	0.45678	5.47595
	B0->Y (RF)	0.02875	0.49105	6.33122

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	0.00511	0.00507	0.00809
	A1	0.00000	0.00000	0.00000
	A1	0.00615	0.00603	0.00755
	B0	0.00410	0.00442	0.01019

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	0.00020	0.00156
	A1	0.00000	0.00000	0.00000
	A1	0.00122	0.00104	0.00242
	B0	0.00053	0.00051	0.00222

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)	-0.00093	-0.00094	-0.00093
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00195	-0.00198	-0.00198
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00201	-0.00203	-0.00202

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)	0.00099	0.00099	0.00096
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00197	0.00199	0.00198
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00204	0.00203	0.00202

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)	-0.00154	-0.00188	-0.00189
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00193	-0.00197	-0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00199	-0.00200	-0.00199

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)	0.00187	0.00189	0.00189
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00195	0.00197	0.00196
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00201	0.00201	0.00200

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)	-0.00168	-0.00168	-0.00172

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)	0.00172	0.00176	0.00173

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00259	0.00271	0.00288	0.00285	0.57769

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.01322	0.03682

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)	0.09418	0.90675	10.90400
	A1->Y (FR)	0.08118	0.89490	11.10010
	B0->Y (FR)	0.05464	0.86974	11.08020
	B1->Y (FR)	0.06902	0.88098	10.89290

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)	0.05823	0.49427	5.78322
	A1->Y (RF)	0.04768	0.47995	5.75063
	B0->Y (RF)	0.04019	0.51520	6.55075
	B1->Y (RF)	0.05135	0.53305	6.61347

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	0.00781	0.00762	0.00914
	A1	0.00677	0.00679	0.00967
	B0	0.00488	0.00500	0.00779
	B1	0.00599	0.00585	0.00732

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00185	0.00168	0.00300
	A1	0.00096	0.00089	0.00219
	B0	-0.00014	-0.00003	0.00163
	B1	0.00185	0.00170	0.00333

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)	-0.00157	-0.00191	-0.00191
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00157	-0.00191	-0.00191
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00187	-0.00191	-0.00190
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00193	-0.00193	-0.00193

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)	0.00190	0.00191	0.00191
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00190	0.00191	0.00191
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00189	0.00191	0.00190
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00195	0.00195	0.00194

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)	-0.00091	-0.00091	-0.00091
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00091	-0.00091	-0.00091
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00186	-0.00189	-0.00189
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00192	-0.00194	-0.00193

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)	0.00096	0.00096	0.00092
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00096	0.00096	0.00092
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00188	0.00189	0.00189
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00194	0.00195	0.00193

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)	-0.00092	-0.00093	-0.00092
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00092	-0.00093	-0.00092
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00220	-0.00224	-0.00222
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00220	-0.00221	-0.00226

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)	0.00097	0.00097	0.00093
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00097	0.00098	0.00093
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00222	0.00224	0.00222
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00226	0.00230	0.00227

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)	-0.00156	-0.00189	-0.00190
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00156	-0.00190	-0.00190
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00224	-0.00229	-0.00228
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00224	-0.00225	-0.00230

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)	0.00189	0.00189	0.00190
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00189	0.00190	0.00190
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00227	0.00231	0.00228
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00230	0.00233	0.00231

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00306	0.00282	1.06110
sky130_osu_sc_12T_hs__or2_2	0.00306	0.00282	2.18459
sky130_osu_sc_12T_hs__or2_4	0.00306	0.00282	4.31381
sky130_osu_sc_12T_hs__or2_8	0.00306	0.00283	8.41577
sky130_osu_sc_12T_hs__or2_l	0.00233	0.00218	0.75298

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.01618	0.02552
sky130_osu_sc_12T_hs__or2_2	0.00000	0.02345	0.04393
sky130_osu_sc_12T_hs__or2_4	0.00000	0.03798	0.08075
sky130_osu_sc_12T_hs__or2_8	0.00000	0.06705	0.15439
sky130_osu_sc_12T_hs__or2_l	0.00000	0.17312	0.29632

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)	0.06381	0.58869	6.34867
	B->Y (RR)	0.05675	0.56438	6.28229
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.06710	0.50261	6.39037
	B->Y (RR)	0.05962	0.48126	6.32135
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.08638	0.48249	6.62448
	B->Y (RR)	0.07863	0.46465	6.56257
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.12399	0.51342	6.97185
	B->Y (RR)	0.11610	0.49998	6.91879
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.06556	0.63919	6.22824
	B->Y (RR)	0.05964	0.61734	6.22689

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)	0.11752	0.57595	5.51520
	B->Y (FF)	0.09763	0.55739	5.50850
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.14078	0.57967	5.84281
	B->Y (FF)	0.12114	0.56647	5.82156
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.19970	0.63764	6.23382
	B->Y (FF)	0.18014	0.63052	6.21239
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.32041	0.77233	6.72010
	B->Y (FF)	0.30089	0.76145	6.71240
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.12276	0.57819	5.09369
	B->Y (FF)	0.10486	0.55909	5.08919

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	0.00362	0.00334	0.01185
	B	0.00000	0.00000	0.00000
	B	0.00269	0.00278	0.01330
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00596	0.00590	0.01475
	B	0.00000	0.00000	0.00000
	B	0.00498	0.00532	0.01592
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01130	0.01166	0.02039
	B	0.00000	0.00000	0.00000
	B	0.01027	0.01118	0.02157
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02223	0.02308	0.03179
	B	0.00000	0.00000	0.00000
	B	0.02120	0.02267	0.03269
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00279	0.00270	0.01167
	B	0.00000	0.00000	0.00000
	B	0.00216	0.00233	0.01593

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	0.00791	0.00762	0.01609
	B	0.00000	0.00000	0.00000
	B	0.00661	0.00721	0.02143
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00974	0.00972	0.01800
	B	0.00000	0.00000	0.00000
	B	0.00846	0.00920	0.02284
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01469	0.01465	0.02264
	B	0.00000	0.00000	0.00000
	B	0.01339	0.01417	0.02690
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02743	0.02460	0.03233
	B	0.00000	0.00000	0.00000
	B	0.02626	0.02423	0.03596
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00598	0.00588	0.01571
	B	0.00000	0.00000	0.00000
	B	0.00508	0.00575	0.02339

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)	-0.00163	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00162	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00162	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00162	-0.00196	-0.00197
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00104	-0.00132	-0.00134

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)	0.00196	0.00196	0.00197
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00196	0.00196	0.00197
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00196	0.00196	0.00197
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00196	0.00197	0.00197
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00134	0.00135	0.00135

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)	-0.00094	-0.00094	-0.00094
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00094	-0.00094	-0.00094
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00094	-0.00094	-0.00094
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00093	-0.00094	-0.00094
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00064	-0.00064	-0.00064

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)	0.00099	0.00100	0.00095
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00098	0.00100	0.00095
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00098	0.00100	0.00095
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00099	0.00100	0.00095
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00067	0.00068	0.00065

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00295	0.00388	0.57263
sky130_osu_sc_12T_hs__tbufi_l	0.00230	0.00303	0.39925

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.01257	0.03682
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.14824	0.58599

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)	0.04745	0.86107	11.01200
	OE->Y (FR)	0.04579	0.29545	4.86179
	OE->Y (RR)	0.07713	0.69257	6.39119
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.05571	0.91017	10.44120
	OE->Y (FR)	0.04653	0.29537	4.86171
	OE->Y (RR)	0.08180	0.76712	6.39340

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)	0.02614	0.47595	6.18652
	OE->Y (FF)	0.04682	0.29545	4.86181
	OE->Y (RF)	0.02467	0.44265	5.60580
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.02821	0.48806	5.82188
	OE->Y (FF)	0.04705	0.29537	4.86173
	OE->Y (RF)	0.02669	0.45634	5.27264

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	0.00341	0.00353	0.00645
	OE	0.00000	0.00000	0.00000
	OE	0.00331	0.00335	0.01945
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00263	0.00282	0.00774
	OE	0.00000	0.00000	0.00000
	OE	0.00245	0.00271	0.02315

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	-0.00044	-0.00032	0.00128
	OE	0.00000	0.00000	0.00000
	OE	0.00210	0.00215	0.02056
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00025	-0.00016	0.00124
	OE	0.00000	0.00000	0.00000
	OE	0.00149	0.00178	0.02406

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)	-0.00162	-0.00164	-0.00163
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00146	-0.00148	-0.00146
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00118	-0.00119	-0.00117
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00106	-0.00107	-0.00106

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)	0.00162	0.00164	0.00163
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00149	0.00150	0.00147
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00118	0.00119	0.00117
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00108	0.00108	0.00106

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)	0.00124	0.00132	0.01992
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00110	0.00119	0.01977
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00089	0.00121	0.02378
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00075	0.00109	0.02362

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)	0.00412	0.00452	0.02305
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00418	0.00455	0.02312
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00319	0.00388	0.02656
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00319	0.00392	0.02661

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00295	0.00437	0.57266
sky130_osu_sc_12T_hs__tnbufi_l	0.00220	0.00334	0.39973

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.01752	0.02197
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.24536	0.29466

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)	0.04789	0.86084	11.01210
	OE->Y (RR)	0.02382	0.29556	4.86192
	OE->Y (FR)	0.05764	0.86782	10.81070
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.05469	0.90613	10.44600
	OE->Y (RR)	0.02514	0.29531	4.86173
	OE->Y (FR)	0.06243	0.92737	10.41270

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)	0.02558	0.47528	6.18652
	OE->Y (RF)	0.02355	0.29556	4.86197
	OE->Y (FF)	0.05192	0.45936	4.44579
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.02681	0.48637	5.82520
	OE->Y (RF)	0.02497	0.29533	4.86175
	OE->Y (FF)	0.05647	0.46068	4.02559

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	0.00355	0.00366	0.00658
	OE	0.00000	0.00000	0.00000
	OE	0.00842	0.00904	0.02806
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00269	0.00274	0.00781
	OE	0.00000	0.00000	0.00000
	OE	0.00647	0.00738	0.03031

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	-0.00061	-0.00047	0.00112
	OE	0.00000	0.00000	0.00000
	OE	0.00736	0.00812	0.02481
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00033	0.00107
	OE	0.00000	0.00000	0.00000
	OE	0.00565	0.00675	0.02789

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)	-0.00133	-0.00134	-0.00134
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00118	-0.00119	-0.00119
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00091	-0.00093	-0.00092
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00080	-0.00082	-0.00081

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)	0.00133	0.00134	0.00134
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00121	0.00122	0.00119
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00091	0.00093	0.00092
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00083	0.00083	0.00082

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)	-0.00210	-0.00229	0.01658
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00212	-0.00225	0.01661
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00140	-0.00129	0.02137
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00147	-0.00129	0.02138

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)	0.00634	0.00706	0.02608
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00626	0.00713	0.02602
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00494	0.00602	0.02882
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00488	0.00586	0.02877

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00593	0.00504	0.60123

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.03902	0.05879

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	0.09863	0.73538	6.68983
	A->Y (FR)	!B	0.06279	0.88372	11.23800
	B->Y (RR)	A	0.08008	0.71795	6.71180
	B->Y (FR)	!A	0.07740	0.89309	11.05190

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	0.08614	0.53638	4.81426
	A->Y (RF)	!B	0.03565	0.46057	5.80788
	B->Y (FF)	A	0.07684	0.52764	4.81052
	B->Y (RF)	!A	0.04267	0.47037	5.81490

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	0.00350	0.00337	0.01985
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00856	0.00903	0.03050
	B	A	0.00000	0.00000	0.00000
	B	A	0.00152	0.00170	0.02026
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00902	0.00938	0.02925

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	0.01025	0.01041	0.02853
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00237	0.00234	0.02184
	B	A	0.00000	0.00000	0.00000
	B	A	0.00926	0.00989	0.02849
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00311	0.00301	0.02249

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00593	0.00508	0.55590

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.03902	0.05508

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	0.10240	0.73661	6.57040
	A->Y (FR)	B	0.08128	0.90127	10.93670
	B->Y (RR)	!A	0.08488	0.72930	6.57396
	B->Y (FR)	A	0.08753	0.90734	10.93240

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	0.08371	0.52404	4.53080
	A->Y (RF)	B	0.03607	0.48844	6.08704
	B->Y (FF)	!A	0.07958	0.52124	4.59503
	B->Y (RF)	A	0.04136	0.45818	5.52566

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	0.01002	0.01028	0.02983
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00211	0.00152	0.01938
	B	A	0.00000	0.00000	0.00000
	B	A	0.01011	0.01042	0.02980
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00147	0.00155	0.01980

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	0.00200	0.00181	0.02125
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01073	0.01122	0.02744
	B	A	0.00000	0.00000	0.00000
	B	A	0.00201	0.00182	0.02072
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00937	0.01003	0.02818

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__ant	4.39560
sky130_osu_sc_12T_hs__tiehi	4.39560
sky130_osu_sc_12T_hs__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_hs__ant	0.32092
sky130_osu_sc_12T_hs__tiehi	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__ant	0.00000	135643.00000	271287.00000
sky130_osu_sc_12T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	-0.00149	0.02777	0.46121

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	2.36173	2.25674	0.56575