sky130_osu_sc_12T_hs_ss_1P60_150C.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_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.01161	0.01160	0.00888	0.87108	0.38921	0.80637
sky130_osu_sc_12T_hs__addf_l	0.01162	0.01160	0.00889	0.62375	0.39080	0.80636

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	1.68677	1.82284
sky130_osu_sc_12T_hs__addf_l	0.00000	2.91661	4.29018

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)	0.23045	2.07740	25.45870
	B->CO (RR)	0.23324	2.08211	25.54870
	CI->CO (RR)	0.21782	2.11709	26.23690
	CON->CO (FR)	0.03696	0.81441	10.95820
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.22873	1.93278	21.02210
	B->CO (RR)	0.23165	1.94504	21.30800
	CI->CO (RR)	0.21607	1.97267	21.81770
	CON->CO (FR)	0.04181	0.86472	10.66280

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)	0.32732	2.60033	31.25170
	B->CO (FF)	0.29765	2.51349	30.36680
	CI->CO (FF)	0.28930	2.58131	31.68650
	CON->CO (RF)	0.02982	0.65066	8.81169
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.31648	2.32181	24.60580
	B->CO (FF)	0.28528	2.21826	23.99560
	CI->CO (FF)	0.27833	2.30374	25.05580
	CON->CO (RF)	0.03096	0.65676	8.33320

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)	0.24098	1.11871	9.88410
	B->CON (FR)	0.21200	1.06209	9.92351
	CI->CON (FR)	0.20306	1.09919	10.36970
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.22884	1.10831	9.89961
	B->CON (FR)	0.20078	1.05264	9.93760
	CI->CON (FR)	0.19090	1.09067	10.38470

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)	0.14941	0.75205	7.05391
	B->CON (RF)	0.15252	0.78970	7.71357
	CI->CON (RF)	0.13667	0.79241	7.89973
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.14415	0.74785	7.06600
	B->CON (RF)	0.14741	0.78575	7.72492
	CI->CON (RF)	0.13144	0.78826	7.91139

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)	0.47669	2.50058	25.58910
	B->S (-R)	0.50448	2.52927	25.17770
	CI->S (-R)	0.43564	2.47534	26.02470
	CON->S (RR)	0.12375	0.83961	7.98841
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.45898	2.48628	25.57560
	B->S (-R)	0.48627	2.51521	25.16680
	CI->S (-R)	0.41795	2.46122	26.01100
	CON->S (RR)	0.12383	0.83955	7.98813

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)	0.39606	1.84510	17.21730
	B->S (-F)	0.39492	1.80474	17.35190
	CI->S (-F)	0.38268	1.87912	18.00230
	CON->S (FF)	0.15839	0.75409	5.69893
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.38604	1.83833	17.21120
	B->S (-F)	0.38501	1.79791	17.34670
	CI->S (-F)	0.37265	1.87226	17.99620
	CON->S (FF)	0.15846	0.75401	5.69687

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	0.00206	0.00242	0.00891
	B	0.00306	0.00333	0.00933
	CI	0.00308	0.00352	0.01005
sky130_osu_sc_12T_hs__addf_l	A	0.00181	0.00208	0.00698
	B	0.00281	0.00298	0.00751
	CI	0.00282	0.00318	0.00802

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00757	0.00829	0.02025
	B	0.00799	0.00864	0.01936
	CI	0.00637	0.00712	0.01931
sky130_osu_sc_12T_hs__addf_l	A	0.00740	0.00791	0.01607
	B	0.00782	0.00831	0.01552
	CI	0.00621	0.00675	0.01521

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00755	0.00791	0.01342
	B	0.00797	0.00834	0.01321
	CI	0.00704	0.00752	0.01266
sky130_osu_sc_12T_hs__addf_l	A	0.00739	0.00771	0.01300
	B	0.00768	0.00797	0.01279
	CI	0.00686	0.00732	0.01225

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00242	0.00243	0.00573
	B	0.00303	0.00314	0.00651
	CI	0.00306	0.00333	0.00693
sky130_osu_sc_12T_hs__addf_l	A	0.00218	0.00217	0.00549
	B	0.00278	0.00288	0.00629
	CI	0.00281	0.00307	0.00671

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00756	0.00826	0.01925
	B	0.00799	0.00861	0.01850
	CI	0.00637	0.00707	0.01836
sky130_osu_sc_12T_hs__addf_l	A	0.00741	0.00805	0.01852
	B	0.00782	0.00840	0.01781
	CI	0.00621	0.00686	0.01762

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01643	0.01647	0.02624
	B	0.01507	0.01502	0.02593
	CI	0.01350	0.01343	0.02249
sky130_osu_sc_12T_hs__addf_l	A	0.01643	0.01648	0.02624
	B	0.01513	0.01507	0.02598
	CI	0.01355	0.01347	0.02254

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00580	0.00608	0.84561	0.86533	0.87330
sky130_osu_sc_12T_hs__addh_l	0.00567	0.00600	0.62121	0.86606	0.63421

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	1.55909	1.65300
sky130_osu_sc_12T_hs__addh_l	0.00000	4.24442	4.32896

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)	0.19624	0.95991	8.51542
	B->CO (RR)	0.20183	0.93799	8.48594
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.15554	0.91555	7.85986
	B->CO (RR)	0.15965	0.89187	7.79127

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)	0.14667	0.82428	6.94063
	B->CO (FF)	0.15375	0.84759	7.02828
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.12599	0.70946	5.32537
	B->CO (FF)	0.13217	0.72743	5.43094

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)	0.26729	1.00009	8.55513
	B->CON (RR)	0.27123	0.97639	8.52511
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.20388	0.89127	8.00490
	B->CON (RR)	0.20663	0.86496	7.94655

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)	0.20241	0.86823	7.08655
	B->CON (FF)	0.19773	0.88134	7.15831
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.16220	0.72156	5.79704
	B->CON (FF)	0.15939	0.73197	5.88711

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)	0.27409	1.78361	18.66040
	B->S (FR)	0.26847	1.79806	18.78240
	CON->S (FR)	0.03923	0.82299	11.06970
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.22968	1.51558	14.06560
	B->S (FR)	0.22634	1.52638	14.16850
	CON->S (FR)	0.04233	0.87177	10.80480

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)	0.34691	1.94448	20.49350
	B->S (RF)	0.35084	1.92225	20.45650
	CON->S (RF)	0.03677	0.77826	10.55500
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.26601	1.53143	14.24740
	B->S (RF)	0.26872	1.50567	14.17980
	CON->S (RF)	0.03037	0.66223	8.42721

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	0.00390	0.00387	0.00706
	B	0.00000	0.00000	0.00000
	B	0.00354	0.00342	0.00671
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00334	0.00327	0.00778
	B	0.00000	0.00000	0.00000
	B	0.00297	0.00285	0.00765

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	0.00554	0.00548	0.00925
	B	0.00000	0.00000	0.00000
	B	0.00577	0.00592	0.00988
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00500	0.00496	0.00979
	B	0.00000	0.00000	0.00000
	B	0.00522	0.00538	0.01043

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	0.00390	0.00387	0.00708
	B	0.00000	0.00000	0.00000
	B	0.00354	0.00342	0.00670
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00334	0.00327	0.00775
	B	0.00000	0.00000	0.00000
	B	0.00297	0.00285	0.00761

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	0.00553	0.00548	0.00923
	B	0.00000	0.00000	0.00000
	B	0.00577	0.00592	0.00987
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00500	0.00496	0.00978
	B	0.00000	0.00000	0.00000
	B	0.00522	0.00539	0.01043

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	0.00555	0.00548	0.00915
	B	0.00000	0.00000	0.00000
	B	0.00578	0.00593	0.00995
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00502	0.00498	0.00980
	B	0.00000	0.00000	0.00000
	B	0.00524	0.00541	0.01042

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	0.00391	0.00387	0.00715
	B	0.00000	0.00000	0.00000
	B	0.00354	0.00343	0.00676
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00333	0.00327	0.00769
	B	0.00000	0.00000	0.00000
	B	0.00297	0.00285	0.00760

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)	0.73022	0.69689	0.24014
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.73424	0.70074	0.24127

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)	0.73025	0.69741	0.25682
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.73431	0.70123	0.25780

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00304	0.00316	0.84905
sky130_osu_sc_12T_hs__and2_2	0.00304	0.00316	1.68645
sky130_osu_sc_12T_hs__and2_4	0.00304	0.00316	3.30024
sky130_osu_sc_12T_hs__and2_6	0.00307	0.00316	4.94273
sky130_osu_sc_12T_hs__and2_8	0.00304	0.00316	6.44327
sky130_osu_sc_12T_hs__and2_l	0.00229	0.00238	0.62496

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.73671	0.95424
sky130_osu_sc_12T_hs__and2_2	0.00000	0.97093	1.05454
sky130_osu_sc_12T_hs__and2_4	0.00000	1.61662	1.74959
sky130_osu_sc_12T_hs__and2_6	0.00000	2.26231	2.51371
sky130_osu_sc_12T_hs__and2_8	0.00000	2.90801	3.27782
sky130_osu_sc_12T_hs__and2_l	0.00000	3.84197	5.97570

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)	0.12115	0.79752	7.84182
	B->Y (RR)	0.12820	0.78134	7.69239
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.13495	0.73431	7.94888
	B->Y (RR)	0.14211	0.71043	7.79324
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.18185	0.75291	8.26351
	B->Y (RR)	0.18888	0.72265	8.06922
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.22987	0.80697	8.58958
	B->Y (RR)	0.23672	0.77053	8.37090
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.27637	0.85940	8.76147
	B->Y (RR)	0.28345	0.82049	8.51998
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.11896	0.84227	7.79797
	B->Y (RR)	0.12571	0.82840	7.63444

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)**	0.10172	0.62613	5.32922
	B->Y (FF)	0.10569	0.64197	5.40839
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.11818	0.60961	5.51950
	B->Y (FF)	0.12163	0.61989	5.59960
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.16746	0.65939	5.89781
	B->Y (FF)	0.16854	0.66244	5.96511
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.21968	0.72045	6.24947
	B->Y (FF)	0.21813	0.72003	6.29974
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.26924	0.77447	6.43779
	B->Y (FF)	0.26546	0.77076	6.47684
sky130_osu_sc_12T_hs__and2_l	**A->Y (FF)**	0.09920	0.62143	4.88775
	B->Y (FF)	0.10695	0.64424	4.98765

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	0.00270	0.00280	0.01733
	B	0.00000	0.00000	0.00000
	B	0.00275	0.00256	0.01428
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00512	0.00531	0.01937
	B	0.00000	0.00000	0.00000
	B	0.00518	0.00516	0.01666
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01085	0.01116	0.02424
	B	0.00000	0.00000	0.00000
	B	0.01090	0.01104	0.02195
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01708	0.01699	0.02961
	B	0.00000	0.00000	0.00000
	B	0.01717	0.01698	0.02831
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02374	0.02285	0.03602
	B	0.00000	0.00000	0.00000
	B	0.02390	0.02263	0.03291
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00222	0.00242	0.01762
	B	0.00000	0.00000	0.00000
	B	0.00226	0.00224	0.01519

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	0.00666	0.00719	0.02110
	B	0.00000	0.00000	0.00000
	B	0.00754	0.00798	0.02156
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00832	0.00918	0.02294
	B	0.00000	0.00000	0.00000
	B	0.00922	0.00993	0.02341
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01283	0.01399	0.02746
	B	0.00000	0.00000	0.00000
	B	0.01364	0.01462	0.02790
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01786	0.01884	0.03231
	B	0.00000	0.00000	0.00000
	B	0.01867	0.01938	0.03267
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.02343	0.02351	0.03718
	B	0.00000	0.00000	0.00000
	B	0.02404	0.02397	0.03733
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00507	0.00571	0.02052
	B	0.00000	0.00000	0.00000
	B	0.00572	0.00629	0.02094

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)	-0.00236	-0.00237	-0.00239
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00235	-0.00237	-0.00239
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00235	-0.00236	-0.00238
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00236	-0.00237	-0.00240
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00233	-0.00234	-0.00237
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00161	-0.00162	-0.00163

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)	0.00241	0.00245	0.00241
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00241	0.00245	0.00241
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00242	0.00245	0.00242
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00245	0.00247	0.00245
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00243	0.00245	0.00243
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00169	0.00172	0.00169

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)	-0.00227	-0.00229	-0.00227
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00227	-0.00229	-0.00227
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00227	-0.00228	-0.00227
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00226	-0.00226	-0.00226
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00225	-0.00227	-0.00225
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00156	-0.00155	-0.00155

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)	0.00237	0.00231	0.00230
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00236	0.00231	0.00230
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00236	0.00235	0.00231
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00237	0.00235	0.00231
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00236	0.00232
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00166	0.00165	0.00162

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00280	0.00298	0.00296	0.37321

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.40257	0.72444

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)	0.12310	1.00590	9.66933
	A1->Y (FR)	0.10244	0.93831	9.27447
	B0->Y (FR)	0.09233	0.99911	10.24820

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)	0.07914	0.66295	6.71424
	A1->Y (RF)	0.07397	0.70223	7.46576
	B0->Y (RF)	0.03791	0.57165	6.44093

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	0.00574	0.00569	0.00785
	A1	0.00000	0.00000	0.00000
	A1	0.00488	0.00482	0.00698
	B0	0.00356	0.00369	0.00683

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	0.00137	0.00118	0.00332
	A1	0.00000	0.00000	0.00000
	A1	0.00139	0.00125	0.00359
	B0	-0.00046	-0.00041	0.00206

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)	-0.00164	-0.00198	-0.00200
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00202	-0.00203	-0.00202
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00202	-0.00202	-0.00202

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)	0.00199	0.00199	0.00200
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00202	0.00203	0.00203
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00209	0.00207	0.00203

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)	-0.00163	-0.00197	-0.00200
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00202	-0.00203	-0.00202
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00218	-0.00219	-0.00221

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)	0.00199	0.00201	0.00200
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00202	0.00206	0.00204
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00221	0.00226	0.00222

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)	-0.00090	-0.00090	-0.00090

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)	0.00099	0.00100	0.00093

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00281	0.00297	0.00310	0.00292	0.37538

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.46235	0.78001

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)	0.15473	1.04866	9.77334
	A1->Y (FR)	0.13955	1.02959	9.72854
	B0->Y (FR)	0.09654	1.00373	10.29810
	B1->Y (FR)	0.11213	1.02707	10.35540

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)	0.10606	0.69490	6.77081
	A1->Y (RF)	0.10073	0.73264	7.52121
	B0->Y (RF)	0.05423	0.68044	7.46370
	B1->Y (RF)	0.06018	0.64185	6.71263

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	0.00701	0.00695	0.00907
	A1	0.00615	0.00607	0.00819
	B0	0.00384	0.00381	0.00723
	B1	0.00473	0.00475	0.00812

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00269	0.00250	0.00467
	A1	0.00270	0.00255	0.00492
	B0	-0.00029	-0.00026	0.00214
	B1	-0.00024	-0.00030	0.00189

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)	-0.00160	-0.00197	-0.00200
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00202	-0.00202	-0.00202
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00202	-0.00202	-0.00202
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00202	-0.00202	-0.00202

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)	0.00198	0.00200	0.00200
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00202	0.00202	0.00204
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00209	0.00207	0.00203
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00209	0.00207	0.00203

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)	-0.00160	-0.00197	-0.00200
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00202	-0.00203	-0.00202
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00217	-0.00218	-0.00220
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00218	-0.00218	-0.00220

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)	0.00199	0.00201	0.00200
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00204	0.00205	0.00204
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00220	0.00225	0.00221
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00220	0.00225	0.00221

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)	-0.00089	-0.00090	-0.00090
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00087	-0.00088	-0.00088
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00227	-0.00227	-0.00230
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00227	-0.00227	-0.00229

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)	0.00103	0.00103	0.00093
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00089	0.00090	0.00090
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00230	0.00231	0.00230
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00230	0.00231	0.00230

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)	-0.00091	-0.00091	-0.00091
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00088	-0.00090	-0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00212	-0.00212	-0.00212
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00212	-0.00213	-0.00212

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)	0.00104	0.00105	0.00094
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00090	0.00091	0.00091
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00219	0.00214	0.00213
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00219	0.00214	0.00213

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00316	0.80648
sky130_osu_sc_12T_hs__buf_2	0.00316	1.64421
sky130_osu_sc_12T_hs__buf_4	0.00315	3.26991
sky130_osu_sc_12T_hs__buf_6	0.00084	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00315	6.46706
sky130_osu_sc_12T_hs__buf_l	0.00234	0.62448

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.67539	0.67539
sky130_osu_sc_12T_hs__buf_2	0.00000	0.86497	0.95425
sky130_osu_sc_12T_hs__buf_4	0.00000	1.39224	1.71836
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	2.44679	3.24659
sky130_osu_sc_12T_hs__buf_l	0.00000	3.13502	3.13505

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)**	0.08596	0.74592	7.50680
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.09012	0.65650	7.58370
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.11772	0.64802	7.87334
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.17264	0.70384	8.31934
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.08546	0.78534	7.47616

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)**	0.09659	0.60562	5.13084
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.11318	0.59700	5.45082
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.16261	0.65083	5.89022
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.26387	0.76746	6.48196
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.09652	0.61720	4.95128

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	0.00259	0.00275	0.01449
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00495	0.00520	0.01716
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01041	0.01098	0.02289
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02199	0.02262	0.03360
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00208	0.00227	0.01676

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	0.00649	0.00696	0.02092
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00813	0.00880	0.02257
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01256	0.01351	0.02696
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.02309	0.02294	0.03632
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00502	0.00569	0.02117

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
	-0.00055	-0.00055	-0.00052

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
	0.00055	0.00055	0.00052

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00293	0.00291	0.00888	0.85512	0.85088
sky130_osu_sc_12T_hs__dffr_l	0.00293	0.00291	0.00888	0.62457	0.62818

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffr_1	0.00000	4.13635	6.72485
sky130_osu_sc_12T_hs__dffr_l	0.00000	6.59602	9.18451

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)	0.46480	1.76935	16.15310
	QN->Q (FR)	0.04095	0.87650	11.74060
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.45052	1.80399	15.07100
	QN->Q (FR)	0.04417	0.90893	11.20910

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)	0.45422	1.81741	17.29310
	QN->Q (RF)	0.03167	0.68747	9.28276
	RN->Q (FF)	0.33187	1.73869	17.28860
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.45503	1.91945	16.68680
	QN->Q (RF)	0.03229	0.69205	8.75579
	RN->Q (FF)	0.33326	1.84051	16.67540

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)	0.40184	1.08255	7.93602
	RN->QN (FR)	0.27925	1.00368	7.93027
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.39838	1.13182	7.83268
	RN->QN (FR)	0.27630	1.05281	7.81922

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)**	0.40109	0.95179	5.75390
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.38364	0.94031	5.35590

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)	-0.11099	-0.11739	-0.08899
	setup	CK (R)	0.35779	0.36436	0.80355
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.11199	-0.11764	-0.09162
	setup	CK (R)	0.35946	0.36513	0.80707

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)	-0.18477	-0.37956	-2.35533
	setup	CK (R)	0.21520	0.39079	2.38007
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.18299	-0.37911	-2.35234
	setup	CK (R)	0.21489	0.39079	2.38021

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)	-0.11099	-0.11739	-0.08899
	setup	CK (R)	0.35779	0.36436	0.80355
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.11199	-0.11764	-0.09162
	setup	CK (R)	0.35946	0.36513	0.80707

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)	-0.18477	-0.37956	-2.35533
	setup	CK (R)	0.21520	0.39079	2.38007
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.18299	-0.37911	-2.35234
	setup	CK (R)	0.21489	0.39079	2.38021

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)	0.29583	0.31480	1.04147
	removal	CK (R)	-0.06847	-0.07923	-0.12420
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.29742	0.31775	1.04556
	removal	CK (R)	-0.07103	-0.08093	-0.12636

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)	0.29583	0.31480	1.04147
	removal	CK (R)	-0.06847	-0.07923	-0.12420
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.29742	0.31775	1.04556
	removal	CK (R)	-0.07103	-0.08093	-0.12636

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 ()	0.19808	0.47852	13.33370
	min_pulse_width	RN ()	0.19808	0.47852	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.19448	0.47852	13.33370
	min_pulse_width	RN ()	0.19448	0.47852	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 ()	0.22325	0.47852	13.33370
	min_pulse_width	CK ()	0.23763	0.47852	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.20886	0.47852	13.33370
	min_pulse_width	CK ()	0.23044	0.47852	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 ()	0.46138	0.50722	13.33370
	min_pulse_width	CK ()	0.18010	0.47852	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.46538	0.51163	13.33370
	min_pulse_width	CK ()	0.18010	0.47852	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	0.00672	0.00621	0.01235
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00607	0.00565	0.01460

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	0.00713	0.00828
	RN	-0.00084	-0.04094	-0.54727
	RN	0.01726	0.01685	0.01849
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00703	0.00666	0.01120
	RN	-0.00084	-0.03391	-0.39972
	RN	0.01660	0.01636	0.02128

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	0.00768	0.00713	0.00832
	RN	-0.00084	-0.04082	-0.54454
	RN	0.01726	0.01683	0.01840
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00703	0.00665	0.01121
	RN	-0.00084	-0.03403	-0.40203
	RN	0.01659	0.01636	0.02130

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	0.00667	0.00617	0.01218
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00601	0.00560	0.01429

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	-0.00157	-0.00194	-0.00199
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00830	0.00800	0.01877
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00346	0.00322	0.01400
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00154	-0.00191	-0.00197
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00833	0.00803	0.01879
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00349	0.00324	0.01402

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	0.00204	0.00205	0.00205
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01291	0.01280	0.02422
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00633	0.00624	0.01726
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00207	0.00207
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01294	0.01282	0.02424
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00635	0.00624	0.01728

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)	0.00258	0.00252	0.01772
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00759	0.00737	0.02302
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)	0.00260	0.00255	0.01775
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00762	0.00740	0.02304

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)	0.00656	0.00694	0.02241
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01320	0.01328	0.02906
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)	0.00659	0.00697	0.02243
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01323	0.01331	0.02908

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)	-0.00046	-0.00072	0.01446
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00410	0.00366	0.01927
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00044	-0.00067	0.01441
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00044	-0.00070	0.01448
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00413	0.00368	0.01929
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00042	-0.00065	0.01443

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)	0.00990	0.01013	0.02584
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02070	0.02044	0.03754
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01565	0.01571	0.03133
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02025	0.02063	0.04792
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01101	0.01116	0.02660
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00992	0.01015	0.02586
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02073	0.02046	0.03757
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01567	0.01573	0.03135
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02028	0.02065	0.04795
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01103	0.01118	0.02662

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00289	0.00292	0.00673	0.00906	0.87027	0.87567
sky130_osu_sc_12T_hs__dffsr_l	0.00289	0.00292	0.00673	0.00906	0.62348	0.62812

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	2.93749	3.73522
sky130_osu_sc_12T_hs__dffsr_l	0.00000	5.39716	6.19488

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)	0.49402	1.80766	16.31440
	QN->Q (FR)	0.03909	0.85211	11.46910
	RN->Q (RR)	0.39486	1.71913	16.27210
	SN->Q (FR)	0.36606	1.70640	16.40010
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.48670	1.84979	15.12340
	QN->Q (FR)	0.04408	0.90782	11.19020
	RN->Q (RR)	0.38770	1.76184	15.08160
	SN->Q (FR)	0.35708	1.74411	15.19680

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)	0.55162	1.92387	17.45440
	QN->Q (RF)	0.03145	0.69090	9.36699
	RN->Q (FF)	0.35067	1.76260	17.40780
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.55324	2.02965	16.77950
	QN->Q (RF)	0.03213	0.69103	8.74245
	RN->Q (FF)	0.35385	1.86999	16.72590

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)	0.49703	1.19088	8.08323
	RN->QN (FR)	0.29759	1.02969	8.03732
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.49416	1.24283	7.95568
	RN->QN (FR)	0.29661	1.08446	7.90412

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)	0.43242	0.99826	5.95655
	RN->QN (RF)	0.33342	0.91072	5.91669
	SN->QN (FF)	0.30058	0.89609	6.04279
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.42068	0.98761	5.43227
	RN->QN (RF)	0.32177	0.90098	5.39052
	SN->QN (FF)	0.29145	0.88286	5.50244

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)	-0.12441	-0.13089	-0.16157
	setup	CK (R)	0.37340	0.37452	0.86455
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12577	-0.13230	-0.16366
	setup	CK (R)	0.37112	0.37415	0.86799

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)	-0.21890	-0.40671	-2.45452
	setup	CK (R)	0.27149	0.42048	2.47441
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.22139	-0.40651	-2.45399
	setup	CK (R)	0.27150	0.42047	2.47439

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)	-0.12441	-0.13089	-0.16157
	setup	CK (R)	0.37340	0.37452	0.86455
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12577	-0.13230	-0.16366
	setup	CK (R)	0.37112	0.37415	0.86799

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)	-0.21890	-0.40671	-2.45452
	setup	CK (R)	0.27149	0.42048	2.47441
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.22139	-0.40651	-2.45399
	setup	CK (R)	0.27150	0.42047	2.47439

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)	0.27561	0.29009	1.01251
	removal	CK (R)	-0.04641	-0.05470	-0.09849
	hold	SN (R)	-0.28739	-0.44993	-1.80082
	setup	SN (R)	0.32593	0.48868	3.85773
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.27527	0.29181	1.01548
	removal	CK (R)	-0.04641	-0.05470	-0.09849
	hold	SN (R)	-0.27452	-0.43725	-1.74212
	setup	SN (R)	0.32254	0.47783	3.71306

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)	0.27561	0.29009	1.01251
	removal	CK (R)	-0.04641	-0.05470	-0.09849
	hold	SN (R)	-0.28805	-0.44993	-1.80082
	hold	SN (R)	-0.28739	-0.45357	-1.81428
	setup	SN (R)	0.32364	0.48868	3.68752
	setup	SN (R)	0.32593	0.48868	3.85773
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.27527	0.29181	1.01548
	removal	CK (R)	-0.04641	-0.05470	-0.09849
	hold	SN (R)	-0.27452	-0.43725	-1.74212
	hold	SN (R)	-0.27665	-0.43922	-1.75447
	setup	SN (R)	0.32254	0.47783	3.54345
	setup	SN (R)	0.30968	0.47712	3.71306

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 ()	0.23044	0.47852	13.33370
	min_pulse_width	RN ()	0.23763	0.47852	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.23044	0.47852	13.33370
	min_pulse_width	RN ()	0.23403	0.47852	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)	0.07415	0.09862	2.80614
	removal	CK (R)	-0.03144	-0.06950	-0.37103
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.07391	0.09845	2.70861
	removal	CK (R)	-0.03144	-0.06950	-0.37103

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)	0.07415	0.09862	2.80614
	removal	CK (R)	-0.03144	-0.06950	-0.37103
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.07391	0.09845	2.70861
	removal	CK (R)	-0.03144	-0.06950	-0.37103

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 ()	0.28796	0.47852	13.33370
	min_pulse_width	SN ()	0.29875	0.47852	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.28796	0.47852	13.33370
	min_pulse_width	SN ()	0.28437	0.47852	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 ()	0.23044	0.47852	13.33370
	min_pulse_width	CK ()	0.26998	0.47852	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.22325	0.47852	13.33370
	min_pulse_width	CK ()	0.26639	0.47852	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 ()	0.48105	0.51605	13.33370
	min_pulse_width	CK ()	0.24482	0.47852	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.47920	0.51826	13.33370
	min_pulse_width	CK ()	0.24482	0.47852	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	0.00836	0.00791	0.01383
	RN	0.01518	0.01479	0.01627
	SN	-0.00084	-0.04138	-0.55697
	SN	0.01696	0.01634	0.01896
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00775	0.00740	0.01608
	RN	0.01457	0.01427	0.01820
	SN	-0.00084	-0.03387	-0.39903
	SN	0.01635	0.01581	0.02148

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	0.00893	0.00860	0.01174
	RN	-0.00084	-0.04138	-0.55697
	RN	0.01811	0.01782	0.02175
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00828	0.00797	0.01256
	RN	-0.00084	-0.03387	-0.39903
	RN	0.01744	0.01718	0.02232

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	0.00859	0.01175
	RN	-0.00084	-0.04153	-0.56040
	RN	0.01809	0.01780	0.02141
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00828	0.00795	0.01253
	RN	-0.00084	-0.03402	-0.40199
	RN	0.01744	0.01717	0.02222

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	0.00831	0.00786	0.01356
	RN	0.01513	0.01474	0.01628
	SN	-0.00084	-0.04153	-0.56034
	SN	0.01691	0.01628	0.01905
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00769	0.00733	0.01574
	RN	0.01450	0.01420	0.01853
	SN	-0.00084	-0.03402	-0.40194
	SN	0.01628	0.01575	0.02125

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	-0.00197	-0.00199	-0.00200
	(!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)	0.01046	0.01018	0.02080
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00386	0.00361	0.01424
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00381	0.00357	0.01425
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00384	0.00360	0.01426
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00195	-0.00197	-0.00197
	(!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)	0.01048	0.01021	0.02082
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00388	0.00363	0.01427
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00383	0.00359	0.01428
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00386	0.00362	0.01428

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	0.00210	0.00207	0.00204
	(!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)	0.01492	0.01477	0.02572
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00676	0.00670	0.01765
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00686	0.00679	0.01765
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00673	0.00668	0.01761
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00212	0.00209	0.00206
	(!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)	0.01495	0.01479	0.02574
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00678	0.00672	0.01767
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00688	0.00681	0.01767
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00675	0.00671	0.01763

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)	0.00205	0.00196	0.01705
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00892	0.00866	0.02398
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)	0.00207	0.00198	0.01707
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00894	0.00868	0.02400

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)	0.00704	0.00746	0.02305
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01389	0.01406	0.02975
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)	0.00706	0.00748	0.02307
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01391	0.01408	0.02977

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)	-0.00497	-0.00498	-0.00501
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00467	-0.00536	-0.00540
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00468	-0.00502	-0.00505
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00281	0.00254	0.01322
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)	-0.00495	-0.00496	-0.00499
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00465	-0.00534	-0.00538
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00466	-0.00500	-0.00502
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00284	0.00256	0.01324

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)	0.00506	0.00509	0.00508
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00545	0.00547	0.00546
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00508	0.00508	0.00511
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01123	0.01101	0.02120
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)	0.00508	0.00511	0.00510
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00547	0.00549	0.00548
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00510	0.00510	0.00513
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01125	0.01103	0.02122

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)	-0.00051	-0.00079	0.01438
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00477	0.00435	0.01988
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00464	0.00422	0.01982
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00035	-0.00058	0.01447
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00259	0.00227	0.03043
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00049	-0.00077	0.01440
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00479	0.00437	0.01990
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00466	0.00424	0.01984
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00033	-0.00056	0.01449
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00262	0.00229	0.03045

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)	0.02308	0.02287	0.03985
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01009	0.01029	0.02599
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01597	0.01604	0.03167
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01600	0.01606	0.03163
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02232	0.02255	0.04976
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01099	0.01112	0.02656
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01353	0.01395	0.04301
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02310	0.02289	0.03987
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01012	0.01031	0.02601
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01599	0.01606	0.03169
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01602	0.01608	0.03165
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02234	0.02257	0.04978
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01101	0.01115	0.02658
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01355	0.01397	0.04303

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00291	0.00549	0.00899	0.84659	0.85308
sky130_osu_sc_12T_hs__dffs_l	0.00291	0.00549	0.00899	0.62549	0.62864

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	5.86895	13.46240
sky130_osu_sc_12T_hs__dffs_l	0.00000	8.32858	15.92200

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)	0.34860	1.62257	15.84020
	QN->Q (FR)	0.04092	0.87120	11.63800
	SN->Q (FR)	0.25732	1.60148	15.91230
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.34309	1.67620	14.94270
	QN->Q (FR)	0.04413	0.90760	11.19540
	SN->Q (FR)	0.25207	1.65122	14.98270

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)	0.51404	1.88033	17.18440
	QN->Q (RF)	0.03156	0.68372	9.21476
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.51096	1.98412	16.75760
	QN->Q (RF)	0.03220	0.69091	8.74866

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)	0.45888	1.15362	8.01187
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.45160	1.19618	7.89284

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)	0.29055	0.81571	5.62013
	SN->QN (FF)	0.19831	0.79609	5.69179
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.28159	0.81419	5.22367
	SN->QN (FF)	0.18968	0.79021	5.26076

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)	-0.08765	-0.09696	-0.07488
	setup	CK (R)	0.25285	0.26711	0.77444
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.08882	-0.09675	-0.07465
	setup	CK (R)	0.25297	0.26867	0.78322

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)	-0.19439	-0.38024	-2.37506
	setup	CK (R)	0.24308	0.39616	2.39831
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.19351	-0.38239	-2.37508
	setup	CK (R)	0.24308	0.39616	2.39833

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)	-0.08765	-0.09696	-0.07488
	setup	CK (R)	0.25285	0.26711	0.77444
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.08882	-0.09675	-0.07465
	setup	CK (R)	0.25297	0.26867	0.78322

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)	-0.19439	-0.38024	-2.37506
	setup	CK (R)	0.24308	0.39616	2.39831
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.19351	-0.38239	-2.37508
	setup	CK (R)	0.24308	0.39616	2.39833

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)	0.06674	0.08900	1.52706
	removal	CK (R)	-0.02800	-0.05914	-0.33917
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.06676	0.08900	1.39786
	removal	CK (R)	-0.02800	-0.05914	-0.33917

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)	0.06674	0.08900	1.52706
	removal	CK (R)	-0.02800	-0.05914	-0.33917
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.06676	0.08900	1.39786
	removal	CK (R)	-0.02800	-0.05914	-0.33917

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 ()	0.17291	0.47852	13.33370
	min_pulse_width	SN ()	0.18010	0.47852	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.17291	0.47852	13.33370
	min_pulse_width	SN ()	0.16931	0.47852	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 ()	0.15853	0.47852	13.33370
	min_pulse_width	CK ()	0.25201	0.47852	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.15134	0.47852	13.33370
	min_pulse_width	CK ()	0.24482	0.47852	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 ()	0.35987	0.47852	13.33370
	min_pulse_width	CK ()	0.21605	0.47852	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.35987	0.47852	13.33370
	min_pulse_width	CK ()	0.21605	0.47852	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	0.00669	0.00624	0.01241
	SN	-0.00084	-0.04070	-0.54182
	SN	0.01424	0.01394	0.02144
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00605	0.00568	0.01409
	SN	-0.00084	-0.03394	-0.40031
	SN	0.01358	0.01338	0.02319

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	0.00772	0.00721	0.00867
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00706	0.00672	0.01137

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	0.00771	0.00719	0.00854
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00705	0.00671	0.01138

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	0.00666	0.00622	0.01220
	SN	-0.00084	-0.04088	-0.54587
	SN	0.01420	0.01390	0.02122
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00599	0.00564	0.01436
	SN	-0.00084	-0.03404	-0.40227
	SN	0.01352	0.01332	0.02341

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	-0.00191	-0.00193	-0.00194
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00805	0.00778	0.01903
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00343	0.00318	0.01393
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00189	-0.00191	-0.00191
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00807	0.00780	0.01905
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00345	0.00321	0.01395

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	0.00221	0.00218	0.00215
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01272	0.01257	0.02378
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00627	0.00622	0.01730
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00224	0.00220	0.00217
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01275	0.01259	0.02381
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00630	0.00624	0.01732

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)	-0.00360	-0.00362	-0.00363
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00263	0.00245	0.01596
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)	-0.00357	-0.00359	-0.00360
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00266	0.00249	0.01599

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)	0.00371	0.00372	0.00368
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00772	0.00783	0.02242
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)	0.00372	0.00373	0.00369
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00774	0.00788	0.02243

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)	-0.00047	-0.00073	0.01446
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00032	-0.00055	0.01453
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00222	0.00191	0.03034
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00071	0.01448
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00030	-0.00053	0.01455
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00224	0.00193	0.03036

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)	0.02057	0.02032	0.03773
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00989	0.01012	0.02584
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01989	0.02011	0.04738
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01100	0.01115	0.02660
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01285	0.01334	0.04259
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02060	0.02034	0.03775
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00992	0.01014	0.02586
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01991	0.02013	0.04740
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01103	0.01117	0.02662
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01288	0.01336	0.04261

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00306	0.00883	0.78965
sky130_osu_sc_12T_hs__dff_l	0.00306	0.00883	0.59334

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	2.45430	2.77161
sky130_osu_sc_12T_hs__dff_l	0.00000	4.91392	5.23126

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)**	0.30558	0.98508	7.72854
sky130_osu_sc_12T_hs__dff_l	**CK->Q (RR)**	0.29942	1.03041	7.63425

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)**	0.43099	0.93539	5.42386
sky130_osu_sc_12T_hs__dff_l	**CK->Q (RF)**	0.42777	0.94666	5.14833

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)	-0.08416	-0.09366	-0.08864
	setup	CK (R)	0.21582	0.23012	0.75913
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.08380	-0.09482	-0.08683
	setup	CK (R)	0.21595	0.23347	0.76814

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)	-0.17855	-0.38398	-2.41042
	setup	CK (R)	0.21031	0.39953	2.43358
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.17938	-0.38560	-2.41049
	setup	CK (R)	0.21037	0.39953	2.43362

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 ()	0.14415	0.47852	13.33370
	min_pulse_width	CK ()	0.23044	0.47852	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.14055	0.47852	13.33370
	min_pulse_width	CK ()	0.22684	0.47852	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 ()	0.32032	0.47852	13.33370
	min_pulse_width	CK ()	0.16931	0.47852	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.32032	0.47852	13.33370
	min_pulse_width	CK ()	0.16931	0.47852	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	0.01409	0.01369	0.03825
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01274	0.01233	0.03685

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	0.01545	0.01521	0.03085
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01410	0.01383	0.02940

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	-0.00156	-0.00193	-0.00198
	!CK	0.00000	0.00000	0.00000
	!CK	0.00739	0.00709	0.01814
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00154	-0.00191	-0.00196
	!CK	0.00000	0.00000	0.00000
	!CK	0.00741	0.00712	0.01816

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	0.00202	0.00203	0.00203
	!CK	0.00000	0.00000	0.00000
	!CK	0.01310	0.01289	0.02448
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00204	0.00206	0.00205
	!CK	0.00000	0.00000	0.00000
	!CK	0.01312	0.01291	0.02451

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)	-0.00050	-0.00075	0.01445
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00042	-0.00063	0.01445
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00048	-0.00073	0.01447
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00040	-0.00061	0.01448

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)	0.00987	0.01010	0.02582
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01990	0.01969	0.03716
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02014	0.02041	0.04820
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01085	0.01102	0.02646
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00989	0.01012	0.02585
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01992	0.01971	0.03719
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02016	0.02044	0.04823
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01087	0.01104	0.02648

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00295	0.78324
sky130_osu_sc_12T_hs__inv_10	0.02648	7.71619
sky130_osu_sc_12T_hs__inv_2	0.00549	1.59545
sky130_osu_sc_12T_hs__inv_3	0.00813	2.33381
sky130_osu_sc_12T_hs__inv_4	0.01071	3.16913
sky130_osu_sc_12T_hs__inv_6	0.01604	4.72853
sky130_osu_sc_12T_hs__inv_8	0.02126	6.23371
sky130_osu_sc_12T_hs__inv_l	0.00229	0.56734

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.33769	0.48525
sky130_osu_sc_12T_hs__inv_10	0.00000	2.63634	3.82051
sky130_osu_sc_12T_hs__inv_2	0.00000	0.52727	0.76410
sky130_osu_sc_12T_hs__inv_3	0.00000	0.86496	1.24935
sky130_osu_sc_12T_hs__inv_4	0.00000	1.05453	1.52821
sky130_osu_sc_12T_hs__inv_6	0.00000	1.58180	2.29231
sky130_osu_sc_12T_hs__inv_8	0.00000	2.10907	3.05641
sky130_osu_sc_12T_hs__inv_l	0.00000	1.56747	2.98984

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)**	0.04015	0.81717	10.71110
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.03920	0.51025	10.58840
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.02900	0.68414	10.64390
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.03036	0.63080	10.59570
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.02920	0.59497	10.64110
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.03125	0.55445	10.63810
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.03486	0.52744	10.59120
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.04452	0.85415	10.31030

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)**	0.02984	0.62827	8.32909
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.03365	0.41732	8.46302
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.02308	0.54821	8.42445
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.02438	0.51143	8.45310
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.02348	0.48599	8.50429
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02674	0.45315	8.52376
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.03007	0.43097	8.49656
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.03114	0.63860	7.93949

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	0.00337	0.00356	0.00604
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02768	0.03162	0.05599
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00581	0.00635	0.01126
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00892	0.00971	0.01719
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01136	0.01255	0.02235
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01683	0.01879	0.03352
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02227	0.02518	0.04477
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00262	0.00281	0.00599

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	-0.00050	0.00136
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01020	-0.00813	0.01110
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00190	-0.00162	0.00209
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00249	-0.00196	0.00358
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00390	-0.00323	0.00428
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00596	-0.00462	0.00647
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00808	-0.00625	0.00868
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00033	-0.00027	0.00130

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.22668	0.22668	0.00607	0.23389

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.82743	0.82743

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)	-	0.01857	0.32038	3.05816
	A1->Y (RR)	-	0.02249	0.32433	3.06267
	S0->Y (RR)	(!A0 * A1)	0.06508	0.41628	2.52141
	S0->Y (FR)	(A0 * !A1)	0.04242	0.44906	3.38405

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)	-	0.02115	0.31640	3.02500
	A1->Y (FF)	-	0.01813	0.31288	3.01982
	S0->Y (FF)	(!A0 * A1)	0.08955	0.41233	2.03077
	S0->Y (RF)	(A0 * !A1)	0.03205	0.39430	3.36579

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	-	-0.00329	-0.00330	-0.00329
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00219	-0.00220	-0.00219
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00420	0.00464	0.02101
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00216	-0.00214	0.01366

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	-	0.00330	0.00331	0.00330
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00222	0.00223	0.00222
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00067	0.00074	0.01675
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00899	0.00933	0.02533

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)	-0.00079	-0.00079	-0.00079

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)	0.00079	0.00079	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)	-0.00094	-0.00094	-0.00094

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)	0.00094	0.00094	0.00094

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)	-0.00077	-0.00072	0.01517
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00074	-0.00070	0.01522

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)	0.00690	0.00727	0.02332
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00628	0.00677	0.02299

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00293	0.00294	0.69912
sky130_osu_sc_12T_hs__nand2_l	0.00225	0.00229	0.56920

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.32523	0.76410
sky130_osu_sc_12T_hs__nand2_l	0.00000	1.56322	5.83047

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)	0.04191	0.78520	10.02380
	B->Y (FR)	0.04750	0.76601	9.73804
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.04492	0.85740	10.34140
	B->Y (FR)	0.05290	0.86379	10.33400

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)	0.05041	0.84625	10.64380
	B->Y (RF)	0.05647	0.80846	9.94706
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.05088	0.88815	10.63810
	B->Y (RF)	0.05659	0.85682	9.99165

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	0.00355	0.00369	0.00606
	B	0.00000	0.00000	0.00000
	B	0.00446	0.00433	0.00691
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00264	0.00282	0.00556
	B	0.00000	0.00000	0.00000
	B	0.00333	0.00347	0.00625

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	-0.00036	-0.00034	0.00133
	B	0.00000	0.00000	0.00000
	B	-0.00033	-0.00040	0.00119
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00006	-0.00002	0.00123
	B	0.00000	0.00000	0.00000
	B	-0.00005	-0.00009	0.00113

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)	-0.00228	-0.00229	-0.00231
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00158	-0.00159	-0.00161

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)	0.00231	0.00236	0.00232
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00161	0.00164	0.00161

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)	-0.00215	-0.00217	-0.00215
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00151	-0.00151	-0.00151

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)	0.00223	0.00221	0.00216
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00156	0.00155	0.00152

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00289	0.00317	0.41263
sky130_osu_sc_12T_hs__nor2_l	0.00216	0.00238	0.30074

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.33634	0.48524
sky130_osu_sc_12T_hs__nor2_l	0.00000	1.21616	2.98904

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)	0.09182	0.96296	9.90731
	B->Y (FR)	0.07237	0.96065	10.31170
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.09552	1.02033	9.61170
	B->Y (FR)	0.08026	1.01670	9.92518

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)	0.04023	0.53417	6.02345
	B->Y (RF)	0.03175	0.52140	6.00292
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.03890	0.54087	5.75863
	B->Y (RF)	0.03250	0.53042	5.74104

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	0.00473	0.00470	0.00701
	B	0.00000	0.00000	0.00000
	B	0.00365	0.00378	0.00708
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00340	0.00339	0.00602
	B	0.00000	0.00000	0.00000
	B	0.00272	0.00284	0.00703

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	0.00062	0.00055	0.00313
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00031	0.00219
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00046	0.00045	0.00275
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00012	0.00207

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)	-0.00158	-0.00198	-0.00202
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00099	-0.00129	-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)	0.00202	0.00203	0.00203
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00139	0.00140	0.00139

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)	-0.00090	-0.00092	-0.00090
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00062	-0.00063	-0.00062

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)	0.00095	0.00096	0.00092
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00066	0.00067	0.00064

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00294	0.00304	0.00252	0.40687

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	1.39373	3.47501

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)	0.10075	0.98425	10.26080
	A1->Y (FR)	0.12410	0.99364	9.85983
	B0->Y (FR)	0.05747	0.76645	8.53615

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)	0.06767	0.68078	7.15897
	A1->Y (RF)	0.08468	0.68706	7.07313
	B0->Y (RF)	0.05303	0.71573	7.99374

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	0.00505	0.00512	0.00803
	A1	0.00000	0.00000	0.00000
	A1	0.00619	0.00612	0.00822
	B0	0.00416	0.00436	0.00844

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	0.00030	0.00025	0.00220
	A1	0.00000	0.00000	0.00000
	A1	0.00136	0.00117	0.00315
	B0	0.00058	0.00060	0.00268

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)	-0.00088	-0.00090	-0.00088
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00203	-0.00205	-0.00204
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00208	-0.00209	-0.00208

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	0.00095
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00203	0.00205	0.00204
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00212	0.00210	0.00209

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)	-0.00150	-0.00190	-0.00193
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00201	-0.00204	-0.00202
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00205	-0.00206	-0.00205

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)	0.00198	0.00200	0.00199
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00201	0.00204	0.00202
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00209	0.00208	0.00206

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)	-0.00164	-0.00165	-0.00170

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)	0.00170	0.00172	0.00171

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00278	0.00290	0.00307	0.00303	0.42596

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.43817	0.77378

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)	0.12544	0.99594	9.97041
	A1->Y (FR)	0.10574	0.99205	10.38440
	B0->Y (FR)	0.07857	0.96348	10.35780
	B1->Y (FR)	0.10008	0.96832	9.94549

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)	0.11400	0.74750	7.44051
	A1->Y (RF)	0.09116	0.72079	7.39015
	B0->Y (RF)	0.07841	0.75629	8.22453
	B1->Y (RF)	0.10234	0.78178	8.28313

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	0.00793	0.00787	0.00990
	A1	0.00680	0.00686	0.00967
	B0	0.00495	0.00509	0.00790
	B1	0.00616	0.00612	0.00814

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00203	0.00186	0.00379
	A1	0.00108	0.00100	0.00288
	B0	-0.00013	-0.00007	0.00220
	B1	0.00204	0.00195	0.00402

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)	-0.00156	-0.00195	-0.00198
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00155	-0.00195	-0.00198
	(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)	-0.00200	-0.00200	-0.00199

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)	0.00197	0.00200	0.00199
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00198	0.00200	0.00199
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00196	0.00197	0.00196
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00204	0.00204	0.00201

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)	-0.00088	-0.00090	-0.00088
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00087	-0.00090	-0.00088
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00195	-0.00196	-0.00195
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00200	-0.00200	-0.00199

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)	0.00092	0.00094	0.00090
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00093	0.00094	0.00090
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00195	0.00196	0.00195
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00204	0.00201	0.00200

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)	-0.00088	-0.00089	-0.00089
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00088	-0.00089	-0.00089
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00224	-0.00227	-0.00226
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00220	-0.00222	-0.00229

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)	0.00093	0.00094	0.00091
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00093	0.00094	0.00091
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00227	0.00228	0.00226
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00229	0.00231	0.00230

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)	-0.00154	-0.00194	-0.00197
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00154	-0.00193	-0.00196
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00228	-0.00231	-0.00230
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00223	-0.00225	-0.00232

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)	0.00196	0.00198	0.00198
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00196	0.00197	0.00198
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00231	0.00233	0.00230
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00233	0.00238	0.00234

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00324	0.00301	0.81484
sky130_osu_sc_12T_hs__or2_2	0.00325	0.00301	1.64708
sky130_osu_sc_12T_hs__or2_4	0.00325	0.00301	3.26063
sky130_osu_sc_12T_hs__or2_8	0.00324	0.00302	6.44268
sky130_osu_sc_12T_hs__or2_l	0.00242	0.00227	0.59516

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.60395	0.77569
sky130_osu_sc_12T_hs__or2_2	0.00000	0.74889	1.05456
sky130_osu_sc_12T_hs__or2_4	0.00000	1.15775	1.81869
sky130_osu_sc_12T_hs__or2_8	0.00000	1.97546	3.34695
sky130_osu_sc_12T_hs__or2_l	0.00000	2.07668	3.20684

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)	0.10112	0.79248	7.65032
	B->Y (RR)	0.08764	0.75450	7.49422
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.10593	0.69567	7.67723
	B->Y (RR)	0.09209	0.66291	7.52953
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.13382	0.67834	7.94305
	B->Y (RR)	0.11959	0.65226	7.81774
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.18882	0.72823	8.39650
	B->Y (RR)	0.17412	0.70636	8.29529
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.09949	0.83245	7.40046
	B->Y (RR)	0.08850	0.79852	7.30301

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)	0.18107	0.71401	5.48267
	B->Y (FF)	0.15279	0.69602	5.51175
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.21719	0.71686	5.78016
	B->Y (FF)	0.18917	0.70889	5.81952
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.31012	0.80414	6.23634
	B->Y (FF)	0.28223	0.80169	6.31162
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.50057	1.00835	6.87839
	B->Y (FF)	0.47265	1.00215	7.01665
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.18348	0.71733	5.08463
	B->Y (FF)	0.15819	0.70060	5.11297

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	0.00378	0.00367	0.01349
	B	0.00000	0.00000	0.00000
	B	0.00276	0.00285	0.01371
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00618	0.00625	0.01630
	B	0.00000	0.00000	0.00000
	B	0.00512	0.00547	0.01613
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01168	0.01218	0.02225
	B	0.00000	0.00000	0.00000
	B	0.01060	0.01140	0.02244
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02327	0.02376	0.03356
	B	0.00000	0.00000	0.00000
	B	0.02215	0.02318	0.03338
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00289	0.00289	0.01235
	B	0.00000	0.00000	0.00000
	B	0.00223	0.00241	0.01404

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	0.00788	0.00775	0.01806
	B	0.00000	0.00000	0.00000
	B	0.00649	0.00700	0.02028
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00965	0.00979	0.01981
	B	0.00000	0.00000	0.00000
	B	0.00828	0.00894	0.02179
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01476	0.01462	0.02424
	B	0.00000	0.00000	0.00000
	B	0.01350	0.01363	0.02592
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02875	0.02434	0.03362
	B	0.00000	0.00000	0.00000
	B	0.02732	0.02344	0.03516
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00587	0.00588	0.01609
	B	0.00000	0.00000	0.00000
	B	0.00494	0.00552	0.01929

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)	-0.00160	-0.00201	-0.00204
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00160	-0.00201	-0.00203
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00160	-0.00200	-0.00203
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00159	-0.00200	-0.00203
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00099	-0.00130	-0.00133

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)	0.00203	0.00205	0.00205
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00203	0.00205	0.00205
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00204	0.00205	0.00205
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00204	0.00206	0.00206
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00139	0.00140	0.00140

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)	-0.00090	-0.00091	-0.00090
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00090	-0.00091	-0.00090
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00090	-0.00091	-0.00090
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00089	-0.00090	-0.00089
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00061	-0.00062	-0.00060

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)	0.00097	0.00097	0.00092
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00097	0.00097	0.00093
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00097	0.00097	0.00093
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00097	0.00098	0.00093
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00065	0.00066	0.00063

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00314	0.00405	0.42462
sky130_osu_sc_12T_hs__tbufi_l	0.00239	0.00309	0.30335

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.50167	0.97049
sky130_osu_sc_12T_hs__tbufi_l	0.00000	1.70451	5.97878

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)	0.06756	0.95091	10.31830
	OE->Y (FR)	0.06570	0.32762	4.68817
	OE->Y (RR)	0.11738	0.89511	7.38479
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.07741	1.01212	9.96776
	OE->Y (FR)	0.06406	0.32751	4.68820
	OE->Y (RR)	0.11996	0.96619	7.26540

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)	0.04974	0.70345	7.96868
	OE->Y (FF)	0.06727	0.32761	4.68813
	OE->Y (RF)	0.04391	0.65367	7.19105
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.05072	0.70320	7.42125
	OE->Y (FF)	0.06557	0.32751	4.68818
	OE->Y (RF)	0.04548	0.65677	6.68704

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	0.00345	0.00359	0.00644
	OE	0.00000	0.00000	0.00000
	OE	0.00345	0.00357	0.01849
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00266	0.00270	0.00640
	OE	0.00000	0.00000	0.00000
	OE	0.00256	0.00282	0.01856

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	-0.00042	-0.00035	0.00178
	OE	0.00000	0.00000	0.00000
	OE	0.00218	0.00229	0.01857
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00013	-0.00008	0.00177
	OE	0.00000	0.00000	0.00000
	OE	0.00161	0.00188	0.01856

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)	-0.00159	-0.00160	-0.00159
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00138	-0.00139	-0.00139
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00113	-0.00114	-0.00113
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00099	-0.00099	-0.00099

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)	0.00159	0.00160	0.00159
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00142	0.00143	0.00140
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00113	0.00114	0.00113
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00101	0.00102	0.00100

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)	0.00134	0.00148	0.01777
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00115	0.00130	0.01756
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00100	0.00128	0.01802
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00081	0.00110	0.01783

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)	0.00416	0.00451	0.02080
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00418	0.00456	0.02086
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00317	0.00371	0.02061
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00313	0.00376	0.02062

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00314	0.00476	0.42528
sky130_osu_sc_12T_hs__tnbufi_l	0.00229	0.00355	0.30342

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.60004	0.67537
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	2.65279	3.15538

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)	0.06834	0.95155	10.32880
	OE->Y (RR)	0.03755	0.32785	4.68857
	OE->Y (FR)	0.08119	0.94747	9.87001
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.07613	1.01440	9.96554
	OE->Y (RR)	0.03800	0.32753	4.68822
	OE->Y (FR)	0.08654	1.01606	9.59080

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)	0.04868	0.70341	7.97506
	OE->Y (RF)	0.03715	0.32785	4.68857
	OE->Y (FF)	0.08382	0.60561	4.68203
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.04828	0.70168	7.42058
	OE->Y (RF)	0.03763	0.32757	4.68824
	OE->Y (FF)	0.08770	0.60586	4.16787

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	0.00357	0.00370	0.00655
	OE	0.00000	0.00000	0.00000
	OE	0.00848	0.00915	0.02585
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00265	0.00278	0.00642
	OE	0.00000	0.00000	0.00000
	OE	0.00637	0.00714	0.02430

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	-0.00058	-0.00051	0.00162
	OE	0.00000	0.00000	0.00000
	OE	0.00733	0.00802	0.02384
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00029	0.00157
	OE	0.00000	0.00000	0.00000
	OE	0.00556	0.00638	0.02285

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)	-0.00132	-0.00133	-0.00132
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00113	-0.00115	-0.00113
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00091	-0.00092	-0.00092
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00074	-0.00074	-0.00074

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)	0.00132	0.00133	0.00132
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00116	0.00117	0.00115
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00091	0.00092	0.00092
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00082	0.00082	0.00080

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)	-0.00215	-0.00226	0.01424
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00221	-0.00219	0.01426
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00137	-0.00129	0.01558
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00149	-0.00131	0.01555

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)	0.00636	0.00711	0.02380
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00626	0.00701	0.02372
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00486	0.00571	0.02282
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00476	0.00562	0.02273

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00630	0.00542	0.43646

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	1.19498	1.46303

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	0.14886	0.94432	7.59303
	A->Y (FR)	!B	0.08912	0.97682	10.44010
	B->Y (RR)	A	0.11992	0.91874	7.61493
	B->Y (FR)	!A	0.10805	0.97677	10.02720

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	0.15096	0.73021	5.08957
	A->Y (RF)	!B	0.06617	0.67991	7.36458
	B->Y (FF)	A	0.12717	0.70814	5.07106
	B->Y (RF)	!A	0.08292	0.70096	7.38520

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	0.00363	0.00359	0.01872
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00856	0.00904	0.02827
	B	A	0.00000	0.00000	0.00000
	B	A	0.00145	0.00167	0.01801
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00916	0.00963	0.02801

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	0.01032	0.01049	0.02653
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00236	0.00239	0.02044
	B	A	0.00000	0.00000	0.00000
	B	A	0.00921	0.00990	0.02624
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00309	0.00306	0.02117

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.00631	0.00546	0.41594

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	1.19498	1.55597

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_1	A->Y (RR)	!B	0.14643	0.94470	7.57294
	A->Y (FR)	B	0.11219	0.98414	9.98918
	B->Y (RR)	!A	0.12489	0.93124	7.56634
	B->Y (FR)	A	0.11988	0.99334	9.99261

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_1	A->Y (FF)	!B	0.13596	0.70276	4.83436
	A->Y (RF)	B	0.07419	0.73015	7.90880
	B->Y (FF)	!A	0.13069	0.70334	4.89770
	B->Y (RF)	A	0.07997	0.68936	7.16984

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	0.01000	0.01040	0.02851
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00198	0.00168	0.01756
	B	A	0.00000	0.00000	0.00000
	B	A	0.01015	0.01062	0.02865
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00137	0.00153	0.01762

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	0.00206	0.00191	0.01986
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01056	0.01108	0.02633
	B	A	0.00000	0.00000	0.00000
	B	A	0.00209	0.00200	0.01968
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00932	0.01003	0.02617

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60, Temp 150.00

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	0.26880
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	88816.30000	177632.00000
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
	-0.00148	0.02367	0.34686

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
	1.54672	1.47052	0.41669