sky130_osu_sc_12T_ls_tt_1P68_25C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_LS__ADDFx
SKY130_OSU_SC_12T_LS__ADDHx
SKY130_OSU_SC_12T_LS__AND2x
SKY130_OSU_SC_12T_LS__AOI21
SKY130_OSU_SC_12T_LS__AOI22
SKY130_OSU_SC_12T_LS__BUFx
SKY130_OSU_SC_12T_LS__DFFRx
SKY130_OSU_SC_12T_LS__DFFSRx
SKY130_OSU_SC_12T_LS__DFFSx
SKY130_OSU_SC_12T_LS__DFFx
SKY130_OSU_SC_12T_LS__INVx
SKY130_OSU_SC_12T_LS__MUX2
SKY130_OSU_SC_12T_LS__NAND2x
SKY130_OSU_SC_12T_LS__NOR2x
SKY130_OSU_SC_12T_LS__OAI21
SKY130_OSU_SC_12T_LS__OAI22
SKY130_OSU_SC_12T_LS__OR2x
SKY130_OSU_SC_12T_LS__TBUFIx
SKY130_OSU_SC_12T_LS__TNBUFIx
SKY130_OSU_SC_12T_LS__XNOR2
SKY130_OSU_SC_12T_LS__XOR2
SKY130_OSU_SC_12T_LS_x

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addf_1	31.25760
sky130_osu_sc_12T_ls__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_ls__addf_1	0.01114	0.01119	0.00861	0.93261	0.40998	0.84084
sky130_osu_sc_12T_ls__addf_l	0.01114	0.01119	0.00861	0.63232	0.40995	0.84079

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.00637	0.00772
sky130_osu_sc_12T_ls__addf_l	0.00000	0.00531	0.00756

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.17413	1.76365	22.75580
	B->CO (RR)	0.16788	1.72085	22.34520
	CI->CO (RR)	0.16480	1.78688	23.31640
	CON->CO (FR)	0.03519	0.86381	12.30760
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.17619	1.65413	18.65270
	B->CO (RR)	0.17005	1.62482	18.56880
	CI->CO (RR)	0.16682	1.67856	19.25030
	CON->CO (FR)	0.04197	0.93763	12.12080

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.30694	2.56384	32.29540
	B->CO (FF)	0.27535	2.45413	31.14750
	CI->CO (FF)	0.27217	2.53523	32.56610
	CON->CO (RF)	0.02223	0.53852	7.72583
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.29864	2.25789	24.78880
	B->CO (FF)	0.26827	2.16599	24.00550
	CI->CO (FF)	0.26378	2.22931	25.07620
	CON->CO (RF)	0.02484	0.55940	7.37654

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.24516	1.23085	11.80160
	B->CON (FR)	0.21480	1.14194	11.48500
	CI->CON (FR)	0.21051	1.20266	12.10820
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.23263	1.21840	11.78860
	B->CON (FR)	0.20343	1.13066	11.47330
	CI->CON (FR)	0.19796	1.19019	12.09530

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.09538	0.56791	5.81724
	B->CON (RF)	0.09166	0.58037	6.14127
	CI->CON (RF)	0.08600	0.59292	6.40419
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.09222	0.56472	5.81327
	B->CON (RF)	0.08865	0.57743	6.13701
	CI->CON (RF)	0.08286	0.59142	6.39997

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.43737	2.47812	26.00690
	B->S (-R)	0.43538	2.45329	25.46580
	CI->S (-R)	0.40013	2.44442	26.26750
	CON->S (RR)	0.10230	0.79268	7.43595
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.42067	2.46534	25.99410
	B->S (-R)	0.41915	2.44090	25.45330
	CI->S (-R)	0.38339	2.43144	26.25530
	CON->S (RR)	0.10233	0.79265	7.43530

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-F)	0.30677	1.50768	14.59110
	B->S (-F)	0.30485	1.45770	14.52600
	CI->S (-F)	0.29705	1.52687	15.16280
	CON->S (FF)	0.13691	0.72204	6.06942
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.29922	1.50227	14.58520
	B->S (-F)	0.29787	1.45225	14.52130
	CI->S (-F)	0.28956	1.52271	15.15760
	CON->S (FF)	0.13695	0.72199	6.06875

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00251	0.00239	0.00308
	B	0.00304	0.00305	0.00378
	CI	0.00313	0.00324	0.00419
sky130_osu_sc_12T_ls__addf_l	A	0.00226	0.00213	0.00259
	B	0.00279	0.00276	0.00328
	CI	0.00288	0.00295	0.00361

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00780	0.00796	0.01097
	B	0.00816	0.00833	0.01083
	CI	0.00716	0.00745	0.00997
sky130_osu_sc_12T_ls__addf_l	A	0.00761	0.00772	0.00959
	B	0.00795	0.00809	0.00961
	CI	0.00695	0.00719	0.00877

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00831	0.00833	0.00912
	B	0.00815	0.00825	0.00912
	CI	0.00715	0.00735	0.00832
sky130_osu_sc_12T_ls__addf_l	A	0.00811	0.00810	0.00888
	B	0.00794	0.00805	0.00888
	CI	0.00694	0.00714	0.00809

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00249	0.00236	0.00253
	B	0.00301	0.00298	0.00334
	CI	0.00312	0.00319	0.00369
sky130_osu_sc_12T_ls__addf_l	A	0.00224	0.00211	0.00233
	B	0.00276	0.00272	0.00306
	CI	0.00287	0.00294	0.00343

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00780	0.00795	0.01063
	B	0.00815	0.00832	0.01057
	CI	0.00716	0.00742	0.00968
sky130_osu_sc_12T_ls__addf_l	A	0.00761	0.00774	0.01033
	B	0.00795	0.00811	0.01029
	CI	0.00695	0.00721	0.00941

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01701	0.01704	0.01812
	B	0.01556	0.01506	0.01743
	CI	0.01401	0.01382	0.01513
sky130_osu_sc_12T_ls__addf_l	A	0.01701	0.01704	0.01813
	B	0.01556	0.01506	0.01743
	CI	0.01401	0.01382	0.01513

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addh_1	18.55920
sky130_osu_sc_12T_ls__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ls__addh_1	0.00547	0.00575	0.89094	0.92085	0.92366
sky130_osu_sc_12T_ls__addh_l	0.00547	0.00575	0.62997	0.91656	0.64653

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.00673	0.00751
sky130_osu_sc_12T_ls__addh_l	0.00000	0.00461	0.00539

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (RR)	0.12134	0.78743	7.17747
	B->CO (RR)	0.12453	0.78437	7.24905
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.12239	0.85196	7.12354
	B->CO (RR)	0.12547	0.85040	7.20130

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (FF)	0.11422	0.69651	6.28979
	B->CO (FF)	0.12034	0.71221	6.37216
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.11183	0.71685	6.13003
	B->CO (FF)	0.11773	0.73381	6.20920

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (RR)	0.17608	0.82342	7.22826
	B->CON (RR)	0.17913	0.81885	7.30064
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.16280	0.80336	7.13134
	B->CON (RR)	0.16592	0.79977	7.20744

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (FF)	0.14690	0.72148	6.39769
	B->CON (FF)	0.14663	0.73156	6.48325
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.13620	0.69908	6.25154
	B->CON (FF)	0.13601	0.70941	6.32750

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (FR)	0.20974	1.53727	17.06150
	B->S (FR)	0.20968	1.54619	17.15000
	CON->S (FR)	0.03702	0.87016	12.37230
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.20296	1.49258	14.72600
	B->S (FR)	0.20283	1.50261	14.80270
	CON->S (FR)	0.04260	0.94604	12.30790

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (RF)	0.22192	1.44946	15.41040
	B->S (RF)	0.22494	1.44432	15.47750
	CON->S (RF)	0.02179	0.53553	7.71648
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.21102	1.31519	11.92720
	B->S (RF)	0.21407	1.31182	12.00080
	CON->S (RF)	0.02430	0.56271	7.49750

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00402	0.00383	0.00476
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00349	0.00416
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00356	0.00332	0.00442
	B	0.00000	0.00000	0.00000
	B	0.00322	0.00298	0.00380

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00567	0.00546	0.00607
	B	0.00000	0.00000	0.00000
	B	0.00594	0.00595	0.00668
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00518	0.00496	0.00585
	B	0.00000	0.00000	0.00000
	B	0.00546	0.00543	0.00630

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00403	0.00384	0.00475
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00349	0.00414
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00332	0.00430
	B	0.00000	0.00000	0.00000
	B	0.00322	0.00298	0.00370

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00566	0.00545	0.00616
	B	0.00000	0.00000	0.00000
	B	0.00594	0.00595	0.00675
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00518	0.00495	0.00561
	B	0.00000	0.00000	0.00000
	B	0.00546	0.00543	0.00621

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00567	0.00546	0.00620
	B	0.00000	0.00000	0.00000
	B	0.00594	0.00596	0.00667
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00519	0.00497	0.00583
	B	0.00000	0.00000	0.00000
	B	0.00546	0.00544	0.00635

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00402	0.00383	0.00470
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00349	0.00416
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00332	0.00436
	B	0.00000	0.00000	0.00000
	B	0.00322	0.00298	0.00375

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.81081	0.77289	0.20681
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.81087	0.77294	0.20687

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.81077	0.77290	0.21816
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.81083	0.77296	0.21822

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__and2_1	8.30280
sky130_osu_sc_12T_ls__and2_2	10.25640
sky130_osu_sc_12T_ls__and2_4	14.16360
sky130_osu_sc_12T_ls__and2_6	18.07080
sky130_osu_sc_12T_ls__and2_8	21.97800
sky130_osu_sc_12T_ls__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__and2_1	0.00292	0.00303	0.90129
sky130_osu_sc_12T_ls__and2_2	0.00292	0.00303	1.78944
sky130_osu_sc_12T_ls__and2_4	0.00292	0.00303	3.50263
sky130_osu_sc_12T_ls__and2_6	0.00296	0.00303	5.18452
sky130_osu_sc_12T_ls__and2_8	0.00293	0.00303	6.77735
sky130_osu_sc_12T_ls__and2_l	0.00222	0.00229	0.63736

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00307	0.00483
sky130_osu_sc_12T_ls__and2_2	0.00000	0.00484	0.00513
sky130_osu_sc_12T_ls__and2_4	0.00000	0.00838	0.00935
sky130_osu_sc_12T_ls__and2_6	0.00000	0.01193	0.01387
sky130_osu_sc_12T_ls__and2_8	0.00000	0.01547	0.01839
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00050	0.00075

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (RR)	0.09305	0.72161	6.94033
	B->Y (RR)	0.09817	0.72776	7.01219
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.10352	0.64590	7.07603
	B->Y (RR)	0.10870	0.64407	7.13706
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.14078	0.64532	7.50059
	B->Y (RR)	0.14574	0.63577	7.53046
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.17808	0.67807	7.78134
	B->Y (RR)	0.18301	0.66212	7.80707
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.21402	0.71534	8.02081
	B->Y (RR)	0.21910	0.69631	8.02075
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.10006	0.79767	6.94684
	B->Y (RR)	0.10502	0.80090	7.00181

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (FF)	0.08920	0.62537	5.79786
	B->Y (FF)	0.09284	0.63981	5.88593
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.10606	0.61615	6.04249
	B->Y (FF)	0.10887	0.62458	6.12690
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.15129	0.65835	6.51434
	B->Y (FF)	0.15130	0.65940	6.55767
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.19841	0.70734	6.85057
	B->Y (FF)	0.19533	0.70522	6.88633
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.24242	0.75381	7.06986
	B->Y (FF)	0.23688	0.74923	7.08561
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.09036	0.65157	5.60747
	B->Y (FF)	0.09817	0.67131	5.70924

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00283	0.00247	0.00600
	B	0.00000	0.00000	0.00000
	B	0.00288	0.00242	0.00467
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00526	0.00512	0.00852
	B	0.00000	0.00000	0.00000
	B	0.00532	0.00515	0.00731
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01078	0.01107	0.01425
	B	0.00000	0.00000	0.00000
	B	0.01083	0.01109	0.01309
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01636	0.01697	0.02083
	B	0.00000	0.00000	0.00000
	B	0.01643	0.01704	0.01990
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02188	0.02275	0.02653
	B	0.00000	0.00000	0.00000
	B	0.02193	0.02264	0.02560
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00216	0.00197	0.00527
	B	0.00000	0.00000	0.00000
	B	0.00221	0.00192	0.00414

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00702	0.00697	0.01014
	B	0.00000	0.00000	0.00000
	B	0.00796	0.00779	0.01071
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00884	0.00918	0.01222
	B	0.00000	0.00000	0.00000
	B	0.00981	0.00996	0.01281
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01339	0.01436	0.01744
	B	0.00000	0.00000	0.00000
	B	0.01427	0.01508	0.01791
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01802	0.01963	0.02294
	B	0.00000	0.00000	0.00000
	B	0.01891	0.02028	0.02325
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02256	0.02463	0.02817
	B	0.00000	0.00000	0.00000
	B	0.02350	0.02526	0.02836
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00532	0.00527	0.00833
	B	0.00000	0.00000	0.00000
	B	0.00597	0.00587	0.00874

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00242	-0.00244	-0.00245
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00242	-0.00244	-0.00245
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00242	-0.00243	-0.00245
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00245	-0.00245	-0.00247
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00242	-0.00245	-0.00245
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00170	-0.00171	-0.00172

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00248	0.00246
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00248	0.00246
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00247	0.00246
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00247	0.00250	0.00248
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00244	0.00247	0.00246
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00172	0.00174	0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00233	-0.00232
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00233	-0.00232
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00233	-0.00232
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00233	-0.00232
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00232	-0.00232
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00164	-0.00164	-0.00164

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00234	0.00236	0.00232
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00235	0.00236	0.00232
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00235	0.00235	0.00232
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00234	0.00234	0.00232
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00234	0.00234	0.00232
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00165	0.00166	0.00164

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__aoi21_l	0.00266	0.00285	0.00282	0.39508

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00130	0.00226

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (FR)	0.12391	1.12700	11.69200
	A1->Y (FR)	0.09957	1.03460	11.08790
	B0->Y (FR)	0.09634	1.10818	12.08450

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (RF)	0.04842	0.50805	5.58652
	A1->Y (RF)	0.04445	0.52684	5.96484
	B0->Y (RF)	0.02985	0.48821	5.72467

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00589	0.00581	0.00587
	A1	0.00000	0.00000	0.00000
	A1	0.00497	0.00486	0.00491
	B0	0.00477	0.00464	0.00498

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00111	0.00089	0.00108
	A1	0.00000	0.00000	0.00000
	A1	0.00114	0.00092	0.00123
	B0	-0.00046	-0.00050	-0.00025

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00188	-0.00199	-0.00199
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00202	-0.00204	-0.00203
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00203	-0.00204	-0.00203

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00198	0.00200	0.00199
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00202	0.00205	0.00203
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00206	0.00205	0.00203

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00188	-0.00200	-0.00199
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00203	-0.00204	-0.00203
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00222	-0.00224	-0.00224

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_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)	0.00203	0.00206	0.00204
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00224	0.00229	0.00225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00094	-0.00096	-0.00095

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00105	0.00105	0.00097

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_l	0.00266	0.00284	0.00299	0.00280	0.38957

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00171	0.00452

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (FR)	0.15893	1.16417	11.67000
	A1->Y (FR)	0.14143	1.14009	11.61000
	B0->Y (FR)	0.10251	1.10622	11.98520
	B1->Y (FR)	0.12058	1.13023	12.05910

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (RF)	0.06318	0.52275	5.56426
	A1->Y (RF)	0.05912	0.54032	5.94036
	B0->Y (RF)	0.03520	0.51189	5.90306
	B1->Y (RF)	0.03965	0.49332	5.52942

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00728	0.00719	0.00723
	A1	0.00638	0.00624	0.00627
	B0	0.00511	0.00491	0.00529
	B1	0.00603	0.00589	0.00627

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00229	0.00208	0.00224
	A1	0.00231	0.00212	0.00239
	B0	-0.00025	-0.00032	0.00001
	B1	-0.00021	-0.00031	-0.00011

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00191	-0.00199	-0.00198
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00202	-0.00204	-0.00203
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00202	-0.00204	-0.00203
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00202	-0.00204	-0.00203

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00197	0.00201	0.00198
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00202	0.00205	0.00203
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00206	0.00205	0.00203
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00206	0.00205	0.00203

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00191	-0.00200	-0.00199
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00203	-0.00204	-0.00203
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00222	-0.00223	-0.00224
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00221	-0.00223	-0.00224

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00198	0.00202	0.00199
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00203	0.00206	0.00204
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00223	0.00228	0.00224
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00223	0.00228	0.00224

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00094	-0.00095	-0.00094
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00094	-0.00094	-0.00094
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00232	-0.00234	-0.00234
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00232	-0.00234	-0.00234

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00109	0.00110	0.00098
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00094	0.00094	0.00094
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00233	0.00235	0.00234
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00233	0.00235	0.00234

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00095	-0.00097	-0.00096
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00095	-0.00096	-0.00095
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00214	-0.00215	-0.00214
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00214	-0.00215	-0.00214

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00110	0.00111	0.00099
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00095	0.00096	0.00095
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00216	0.00216	0.00214
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00216	0.00216	0.00214

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__buf_1	6.34920
sky130_osu_sc_12T_ls__buf_2	8.30280
sky130_osu_sc_12T_ls__buf_4	12.21000
sky130_osu_sc_12T_ls__buf_6	16.11720
sky130_osu_sc_12T_ls__buf_8	20.02440
sky130_osu_sc_12T_ls__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__buf_1	0.00304	0.84366
sky130_osu_sc_12T_ls__buf_2	0.00304	1.73857
sky130_osu_sc_12T_ls__buf_4	0.00304	3.44249
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00304	6.76944
sky130_osu_sc_12T_ls__buf_l	0.00227	0.63841

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00257	0.00257
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00385	0.00483
sky130_osu_sc_12T_ls__buf_4	0.00000	0.00642	0.00935
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.01155	0.01839
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00045	0.00045

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (RR)**	0.07201	0.69805	6.82614
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.07489	0.60139	6.95111
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.09922	0.58092	7.29146
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.14805	0.62070	7.77618
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.07671	0.75860	6.82952

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (FF)**	0.08405	0.60411	5.50878
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.10076	0.60326	5.92538
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.14601	0.64840	6.42279
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.23663	0.74670	7.04550
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.08734	0.64465	5.58440

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00269	0.00225	0.00526
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00511	0.00486	0.00778
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01061	0.01082	0.01398
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02160	0.02255	0.02657
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00207	0.00179	0.00488

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00685	0.00664	0.00960
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00863	0.00873	0.01155
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01320	0.01382	0.01664
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02267	0.02395	0.02695
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00526	0.00519	0.00822

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00056	-0.00056	-0.00055

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	0.00056	0.00056	0.00055

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffr_1	42.49080
sky130_osu_sc_12T_ls__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ls__dffr_1	0.00278	0.00279	0.00879	0.89947	0.89295
sky130_osu_sc_12T_ls__dffr_l	0.00278	0.00279	0.00879	0.63642	0.63285

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.00828	0.01249
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.00615	0.01036

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RR)	0.41108	1.54730	13.93720
	QN->Q (FR)	0.04002	0.93725	13.20760
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.40252	1.64940	13.64000
	QN->Q (FR)	0.04477	0.99302	12.82860

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RF)	0.39451	1.59713	15.14600
	QN->Q (RF)	0.02416	0.57861	8.28135
	RN->Q (FF)	0.28943	1.65525	17.42080
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.40122	1.73806	14.93470
	QN->Q (RF)	0.02616	0.59533	7.91956
	RN->Q (FF)	0.29704	1.79577	17.20150

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->QN (RR)	0.35487	0.99468	7.24632
	RN->QN (FR)	0.24955	1.05292	9.51747
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.35609	1.06580	7.23073
	RN->QN (FR)	0.25105	1.12391	9.49314

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	**CK->QN (RF)**	0.34675	0.76865	3.78251
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.33272	0.77719	3.67759

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_ls__dffr_1	hold	CK (R)	-0.07030	-0.09113	-0.31854
	setup	CK (R)	0.31323	0.33464	1.62540
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.07052	-0.09145	-0.31906
	setup	CK (R)	0.31398	0.33622	1.64053

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.17320	-0.43492	-4.40186
	setup	CK (R)	0.20298	0.44632	4.56080
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.17119	-0.43324	-4.39968
	setup	CK (R)	0.20282	0.44632	4.56066

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.07030	-0.09113	-0.31854
	setup	CK (R)	0.31323	0.33464	1.62540
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.07052	-0.09145	-0.31906
	setup	CK (R)	0.31398	0.33622	1.64053

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.17320	-0.43492	-4.40186
	setup	CK (R)	0.20298	0.44632	4.56080
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.17119	-0.43324	-4.39968
	setup	CK (R)	0.20282	0.44632	4.56066

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.27831	0.29855	1.67035
	removal	CK (R)	-0.05991	-0.07067	-0.12552
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.27937	0.29962	1.67676
	removal	CK (R)	-0.05991	-0.07067	-0.12552

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.27831	0.29855	1.67035
	removal	CK (R)	-0.05991	-0.07067	-0.12552
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.27937	0.29962	1.67676
	removal	CK (R)	-0.05991	-0.07067	-0.12552

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	min_pulse_width	RN ()	0.18099	0.43213	13.33370
	min_pulse_width	RN ()	0.18099	0.43213	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.17773	0.43213	13.33370
	min_pulse_width	RN ()	0.17773	0.43213	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_ls__dffr_1	min_pulse_width	CK ()	0.18751	0.43213	13.33370
	min_pulse_width	CK ()	0.20382	0.43213	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.17447	0.43213	13.33370
	min_pulse_width	CK ()	0.20056	0.43213	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_ls__dffr_1	min_pulse_width	CK ()	0.41383	0.50127	13.33370
	min_pulse_width	CK ()	0.16468	0.43213	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.41184	0.50350	13.33370
	min_pulse_width	CK ()	0.16468	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00684	0.00554	-0.00036
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00612	0.00506	0.00206

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00790	0.00697	0.00036
	RN	-0.00091	-0.04633	-0.63467
	RN	0.01788	0.01708	0.01023
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00717	0.00646	0.00394
	RN	-0.00091	-0.03765	-0.44906
	RN	0.01714	0.01657	0.01377

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00790	0.00697	0.00044
	RN	-0.00091	-0.04613	-0.63006
	RN	0.01788	0.01710	0.01022
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00717	0.00646	0.00398
	RN	-0.00091	-0.03752	-0.44654
	RN	0.01714	0.01658	0.01373

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00682	0.00552	-0.00044
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00610	0.00504	0.00195

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00179	-0.00202	-0.00201
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00850	0.00803	0.00994
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00342	0.00302	0.00501
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00179	-0.00202	-0.00201
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00850	0.00803	0.00994
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00342	0.00302	0.00501

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00199	0.00202	0.00201
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01306	0.01281	0.01441
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00637	0.00617	0.00785
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00199	0.00202	0.00201
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01306	0.01281	0.01441
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00637	0.00617	0.00785

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00269	0.00224	0.00557
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00803	0.00736	0.01068
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00269	0.00224	0.00557
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00803	0.00736	0.01068

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00679	0.00658	0.00981
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01358	0.01321	0.01620
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00679	0.00658	0.00981
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01358	0.01321	0.01620

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00047	-0.00107	0.00216
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00432	0.00322	0.00634
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00051	-0.00112	0.00217
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00047	-0.00107	0.00216
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00432	0.00324	0.00637
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00051	-0.00107	0.00217

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01056	0.01019	0.01338
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02160	0.02080	0.02357
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01624	0.01571	0.01848
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02110	0.02036	0.02652
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01148	0.01106	0.01414
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01056	0.01018	0.01338
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02160	0.02080	0.02357
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01624	0.01571	0.01848
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02110	0.02036	0.02652
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01148	0.01106	0.01414

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffsr_1	46.39800
sky130_osu_sc_12T_ls__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_ls__dffsr_1	0.00275	0.00280	0.00648	0.00882	0.92095	0.92526
sky130_osu_sc_12T_ls__dffsr_l	0.00275	0.00280	0.00648	0.00882	0.62964	0.63363

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.01001	0.01278
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.00789	0.01065

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RR)	0.43018	1.57632	14.12410
	QN->Q (FR)	0.03784	0.90714	12.88950
	RN->Q (RR)	0.34651	1.50338	14.17580
	SN->Q (FR)	0.33306	1.62937	16.69570
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.42874	1.68153	13.57560
	QN->Q (FR)	0.04468	0.98820	12.73930
	RN->Q (RR)	0.34536	1.61130	13.63320
	SN->Q (FR)	0.33059	1.73309	16.13180

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RF)	0.45131	1.65272	15.26880
	QN->Q (RF)	0.02399	0.58227	8.37283
	RN->Q (FF)	0.30707	1.67284	17.56840
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.46049	1.79422	14.85160
	QN->Q (RF)	0.02602	0.59268	7.87102
	RN->Q (FF)	0.31703	1.81414	17.14020

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RR)	0.41121	1.05243	7.34988
	RN->QN (FR)	0.26804	1.07174	9.64213
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.41480	1.13119	7.31891
	RN->QN (FR)	0.27178	1.15066	9.60377

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RF)	0.36889	0.80708	3.99207
	RN->QN (RF)	0.28666	0.73748	4.05505
	SN->QN (FF)	0.27131	0.85933	6.56770
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.36048	0.81712	3.76869
	RN->QN (RF)	0.27836	0.74808	3.82874
	SN->QN (FF)	0.26290	0.86967	6.31637

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_ls__dffsr_1	hold	CK (R)	-0.07875	-0.10386	-0.40139
	setup	CK (R)	0.32267	0.33351	1.65720
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.07988	-0.10244	-0.40005
	setup	CK (R)	0.32219	0.33391	1.65957

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.19617	-0.45730	-4.59037
	setup	CK (R)	0.23572	0.46906	4.69746
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.19706	-0.45817	-4.59149
	setup	CK (R)	0.23512	0.46906	4.69698

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.07875	-0.10386	-0.40139
	setup	CK (R)	0.32267	0.33351	1.65720
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.07988	-0.10244	-0.40005
	setup	CK (R)	0.32219	0.33391	1.65957

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.19617	-0.45730	-4.59037
	setup	CK (R)	0.23572	0.46906	4.69746
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.19706	-0.45817	-4.59149
	setup	CK (R)	0.23512	0.46906	4.69698

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.26021	0.27467	1.53953
	removal	CK (R)	-0.03861	-0.04648	-0.09243
	hold	SN (R)	-0.26259	-0.43011	-2.31756
	setup	SN (R)	0.28870	0.46765	6.25953
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.25897	0.27492	1.54318
	removal	CK (R)	-0.03861	-0.04648	-0.09243
	hold	SN (R)	-0.25302	-0.41888	-2.25296
	setup	SN (R)	0.28859	0.45642	6.24117

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.26021	0.27467	1.53953
	removal	CK (R)	-0.03861	-0.04648	-0.09243
	hold	SN (R)	-0.26354	-0.43011	-2.31756
	hold	SN (R)	-0.26259	-0.43156	-2.32624
	setup	SN (R)	0.28664	0.46556	6.09708
	setup	SN (R)	0.28870	0.46765	6.25953
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.25897	0.27492	1.54318
	removal	CK (R)	-0.03861	-0.04648	-0.09243
	hold	SN (R)	-0.25404	-0.41888	-2.25296
	hold	SN (R)	-0.25302	-0.42028	-2.26760
	setup	SN (R)	0.28859	0.45257	6.00296
	setup	SN (R)	0.27222	0.45642	6.24117

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	RN ()	0.20652	0.44551	13.33370
	min_pulse_width	RN ()	0.21325	0.44551	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.20552	0.44328	13.33370
	min_pulse_width	RN ()	0.20887	0.44328	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_ls__dffsr_1	recovery	CK (R)	0.04673	0.07563	5.07383
	removal	CK (R)	-0.01658	-0.05508	-0.39474
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04624	0.07533	4.92892
	removal	CK (R)	-0.01658	-0.05508	-0.39474

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.04673	0.07563	5.07383
	removal	CK (R)	-0.01658	-0.05508	-0.39474
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04624	0.07533	4.92892
	removal	CK (R)	-0.01658	-0.05508	-0.39474

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	SN ()	0.26703	0.49681	13.33370
	min_pulse_width	SN ()	0.27577	0.49904	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.26369	0.48343	13.33370
	min_pulse_width	SN ()	0.25751	0.48566	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_ls__dffsr_1	min_pulse_width	CK ()	0.19077	0.43213	13.33370
	min_pulse_width	CK ()	0.22991	0.43213	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.18425	0.43213	13.33370
	min_pulse_width	CK ()	0.22665	0.43213	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_ls__dffsr_1	min_pulse_width	CK ()	0.42133	0.50573	13.33370
	min_pulse_width	CK ()	0.20056	0.43213	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.42133	0.50573	13.33370
	min_pulse_width	CK ()	0.20056	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00850	0.00724	-0.00172
	RN	0.01571	0.01465	0.00441
	SN	-0.00091	-0.04699	-0.64982
	SN	0.01748	0.01639	0.00502
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00783	0.00683	0.00405
	RN	0.01503	0.01423	0.00952
	SN	-0.00091	-0.03741	-0.44427
	SN	0.01680	0.01598	0.01059

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00910	0.00840	0.00400
	RN	-0.00091	-0.04699	-0.64982
	RN	0.01884	0.01820	0.01357
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00838	0.00773	0.00532
	RN	-0.00091	-0.03741	-0.44427
	RN	0.01811	0.01752	0.01489

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00911	0.00840	0.00395
	RN	-0.00091	-0.04713	-0.65286
	RN	0.01884	0.01820	0.01344
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00839	0.00773	0.00529
	RN	-0.00091	-0.03755	-0.44709
	RN	0.01812	0.01752	0.01477

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00848	0.00723	-0.00165
	RN	0.01569	0.01464	0.00398
	SN	-0.00091	-0.04713	-0.65282
	SN	0.01746	0.01637	0.00526
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00780	0.00681	0.00363
	RN	0.01500	0.01420	0.00931
	SN	-0.00091	-0.03755	-0.44707
	SN	0.01678	0.01596	0.01066

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00197	-0.00203	-0.00202
	(!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)	0.01075	0.01031	0.01219
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00376	0.00337	0.00532
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00373	0.00335	0.00529
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00378	0.00339	0.00534
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00197	-0.00203	-0.00202
	(!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)	0.01075	0.01031	0.01219
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00376	0.00337	0.00532
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00373	0.00335	0.00529
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00378	0.00339	0.00534

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00204	0.00204	0.00202
	(!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)	0.01500	0.01474	0.01618
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00704	0.00685	0.00847
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00707	0.00687	0.00848
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00702	0.00682	0.00845
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00204	0.00204	0.00202
	(!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)	0.01500	0.01474	0.01618
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00704	0.00684	0.00847
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00707	0.00687	0.00848
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00702	0.00682	0.00845

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	0.00217	0.00173	0.00497
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00949	0.00882	0.01203
sky130_osu_sc_12T_ls__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)	0.00217	0.00173	0.00497
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00949	0.00882	0.01203

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	0.00751	0.00730	0.01057
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01450	0.01407	0.01701
sky130_osu_sc_12T_ls__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)	0.00751	0.00730	0.01057
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01450	0.01407	0.01701

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	-0.00514	-0.00517	-0.00518
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00540	-0.00557	-0.00556
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00509	-0.00519	-0.00518
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00236	0.00192	0.00424
sky130_osu_sc_12T_ls__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)	-0.00514	-0.00517	-0.00518
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00540	-0.00557	-0.00556
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00509	-0.00519	-0.00518
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00236	0.00193	0.00424

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__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)	0.00516	0.00529	0.00519
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00554	0.00557	0.00556
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00518	0.00519	0.00518
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01171	0.01138	0.01272
sky130_osu_sc_12T_ls__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)	0.00516	0.00529	0.00519
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00554	0.00557	0.00556
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00518	0.00519	0.00518
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01171	0.01138	0.01272

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00053	-0.00112	0.00208
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00517	0.00412	0.00721
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00512	0.00405	0.00717
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00038	-0.00100	0.00228
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00264	0.00170	0.00812
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00053	-0.00112	0.00208
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00517	0.00412	0.00721
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00512	0.00405	0.00717
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00038	-0.00099	0.00228
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00264	0.00170	0.00812

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02409	0.02332	0.02604
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01076	0.01039	0.01356
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01651	0.01600	0.01878
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01654	0.01608	0.01883
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02312	0.02229	0.02826
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01149	0.01107	0.01414
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01444	0.01377	0.02013
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02409	0.02332	0.02604
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01076	0.01039	0.01356
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01651	0.01600	0.01878
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01654	0.01608	0.01883
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02312	0.02228	0.02826
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01149	0.01107	0.01414
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01444	0.01378	0.02013

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffs_1	38.58360
sky130_osu_sc_12T_ls__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ls__dffs_1	0.00276	0.00534	0.00874	0.89130	0.89637
sky130_osu_sc_12T_ls__dffs_l	0.00276	0.00534	0.00874	0.63089	0.63617

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.00773	0.00996
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.00561	0.00784

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RR)	0.29448	1.40561	13.66270
	QN->Q (FR)	0.04004	0.93109	13.09510
	SN->Q (FR)	0.23714	1.53843	16.20390
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.29454	1.52104	13.39320
	QN->Q (FR)	0.04475	0.98735	12.73650
	SN->Q (FR)	0.23630	1.64940	15.88940

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RF)	0.43499	1.63462	15.02950
	QN->Q (RF)	0.02406	0.57483	8.22428
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.43908	1.77205	14.82840
	QN->Q (RF)	0.02608	0.59210	7.86870

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RR)	0.39419	1.04013	7.30109
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.39294	1.10857	7.29648

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RF)	0.23802	0.63820	3.66517
	SN->QN (FF)	0.17976	0.77165	6.20536
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.23206	0.65850	3.57498
	SN->QN (FF)	0.17322	0.78802	6.06867

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_ls__dffs_1	hold	CK (R)	-0.05603	-0.07863	-0.30210
	setup	CK (R)	0.21002	0.24022	1.69366
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.05653	-0.07797	-0.30124
	setup	CK (R)	0.21028	0.24002	1.69529

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.17514	-0.43546	-3.53096
	setup	CK (R)	0.22051	0.45401	4.59400
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.17572	-0.43564	-3.45533
	setup	CK (R)	0.22023	0.45401	4.59400

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.05603	-0.07863	-0.30210
	setup	CK (R)	0.21002	0.24022	1.69366
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.05653	-0.07797	-0.30124
	setup	CK (R)	0.21028	0.24002	1.69529

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.17514	-0.43546	-3.53096
	setup	CK (R)	0.22051	0.45401	4.59400
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.17572	-0.43564	-3.45533
	setup	CK (R)	0.22023	0.45401	4.59400

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.05446	0.08224	4.10435
	removal	CK (R)	-0.02282	-0.05453	-0.39900
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.05384	0.08209	3.99934
	removal	CK (R)	-0.02282	-0.05453	-0.39900

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.05446	0.08224	4.10435
	removal	CK (R)	-0.02282	-0.05453	-0.39900
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.05384	0.08209	3.99934
	removal	CK (R)	-0.02282	-0.05453	-0.39900

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	min_pulse_width	SN ()	0.16700	0.47897	13.33370
	min_pulse_width	SN ()	0.17063	0.47897	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.16261	0.46559	13.33370
	min_pulse_width	SN ()	0.16334	0.46781	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_ls__dffs_1	min_pulse_width	CK ()	0.11902	0.43213	13.33370
	min_pulse_width	CK ()	0.21360	0.43213	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.11249	0.43213	13.33370
	min_pulse_width	CK ()	0.21034	0.43213	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_ls__dffs_1	min_pulse_width	CK ()	0.30819	0.43213	13.33370
	min_pulse_width	CK ()	0.18751	0.43213	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.30819	0.43213	13.33370
	min_pulse_width	CK ()	0.18751	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00685	0.00553	-0.00067
	SN	-0.00091	-0.04608	-0.62890
	SN	0.01487	0.01369	0.00493
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00613	0.00506	0.00243
	SN	-0.00091	-0.03745	-0.44516
	SN	0.01414	0.01321	0.00973

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00786	0.00698	0.00067
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00713	0.00646	0.00410

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00786	0.00699	0.00066
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00713	0.00647	0.00411

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00683	0.00551	-0.00066
	SN	-0.00091	-0.04624	-0.63244
	SN	0.01484	0.01367	0.00445
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00610	0.00504	0.00197
	SN	-0.00091	-0.03764	-0.44886
	SN	0.01411	0.01320	0.00943

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00200	-0.00206	-0.00205
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00828	0.00778	0.00969
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00341	0.00301	0.00500
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00200	-0.00206	-0.00205
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00828	0.00778	0.00969
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00341	0.00301	0.00500

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00207	0.00208	0.00205
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01299	0.01270	0.01425
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00649	0.00629	0.00798
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00207	0.00208	0.00205
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01299	0.01270	0.01425
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00649	0.00629	0.00798

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00377	-0.00380	-0.00380
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00254	0.00212	0.00479
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00377	-0.00380	-0.00380
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00254	0.00212	0.00479

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00380	0.00384	0.00381
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00810	0.00770	0.01041
sky130_osu_sc_12T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00380	0.00384	0.00381
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00810	0.00770	0.01039

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00047	-0.00106	0.00216
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00044	-0.00106	0.00224
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00235	0.00140	0.00796
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00047	-0.00107	0.00216
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00044	-0.00106	0.00224
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00235	0.00140	0.00797

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02144	0.02069	0.02344
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01057	0.01018	0.01340
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02092	0.01996	0.02619
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01142	0.01100	0.01408
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01368	0.01298	0.01951
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02144	0.02068	0.02344
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01057	0.01018	0.01340
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02091	0.01996	0.02619
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01141	0.01100	0.01408
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01368	0.01298	0.01951

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00291	0.00868	0.83215
sky130_osu_sc_12T_ls__dff_l	0.00291	0.00868	0.60140

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.00924	0.01030
sky130_osu_sc_12T_ls__dff_l	0.00000	0.00712	0.00818

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	CK->Q (RR)	0.24696	0.89033	7.05814
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.24663	0.95679	7.01731

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	CK->Q (RF)	0.36985	0.75802	3.63698
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.37236	0.79216	3.63041

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_ls__dff_1	hold	CK (R)	-0.05067	-0.07780	-0.31828
	setup	CK (R)	0.16761	0.20044	1.92473
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.05064	-0.07783	-0.31860
	setup	CK (R)	0.16372	0.20029	1.95956

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	hold	CK (R)	-0.16675	-0.43704	-2.31691
	setup	CK (R)	0.19572	0.45401	4.62479
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.16697	-0.43790	-2.33409
	setup	CK (R)	0.19568	0.45401	4.62474

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	min_pulse_width	CK ()	0.10271	0.43213	13.33370
	min_pulse_width	CK ()	0.19730	0.43213	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.09945	0.43213	13.33370
	min_pulse_width	CK ()	0.19404	0.43213	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_ls__dff_1	**min_pulse_width**	**CK ()**	0.26253	0.43213	13.33370
	min_pulse_width	**CK ()**	0.15816	0.43213	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.26253	0.43213	13.33370
	min_pulse_width	**CK ()**	0.15816	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01444	0.01308	0.01942
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01296	0.01162	0.01795

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01605	0.01517	0.01816
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01459	0.01372	0.01684

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00178	-0.00200	-0.00199
	!CK	0.00000	0.00000	0.00000
	!CK	0.00751	0.00703	0.00894
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00178	-0.00200	-0.00199
	!CK	0.00000	0.00000	0.00000
	!CK	0.00751	0.00703	0.00894

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00198	0.00201	0.00199
	!CK	0.00000	0.00000	0.00000
	!CK	0.01344	0.01311	0.01473
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00198	0.00201	0.00199
	!CK	0.00000	0.00000	0.00000
	!CK	0.01344	0.01311	0.01473

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00050	-0.00111	0.00214
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00043	-0.00105	0.00225
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00050	-0.00111	0.00214
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00043	-0.00102	0.00225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01054	0.01011	0.01337
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02066	0.01987	0.02275
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02121	0.02029	0.02659
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01135	0.01093	0.01402
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01054	0.01014	0.01337
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02066	0.01987	0.02275
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02121	0.02029	0.02659
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01135	0.01090	0.01402

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__inv_1	4.39560
sky130_osu_sc_12T_ls__inv_10	21.97800
sky130_osu_sc_12T_ls__inv_2	6.34920
sky130_osu_sc_12T_ls__inv_3	8.30280
sky130_osu_sc_12T_ls__inv_4	10.25640
sky130_osu_sc_12T_ls__inv_6	14.16360
sky130_osu_sc_12T_ls__inv_8	18.07080
sky130_osu_sc_12T_ls__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__inv_1	0.00283	0.83121
sky130_osu_sc_12T_ls__inv_10	0.02531	8.35017
sky130_osu_sc_12T_ls__inv_2	0.00526	1.73708
sky130_osu_sc_12T_ls__inv_3	0.00778	2.55224
sky130_osu_sc_12T_ls__inv_4	0.01025	3.44727
sky130_osu_sc_12T_ls__inv_6	0.01534	5.14205
sky130_osu_sc_12T_ls__inv_8	0.02032	6.84018
sky130_osu_sc_12T_ls__inv_l	0.00223	0.59479

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00128	0.00226
sky130_osu_sc_12T_ls__inv_10	0.00000	0.01284	0.02260
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00257	0.00452
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00385	0.00678
sky130_osu_sc_12T_ls__inv_4	0.00000	0.00513	0.00904
sky130_osu_sc_12T_ls__inv_6	0.00000	0.00770	0.01356
sky130_osu_sc_12T_ls__inv_8	0.00000	0.01027	0.01808
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00022	0.00030

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (FR)**	0.03892	0.87674	12.13800
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.04111	0.57041	12.12150
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.02821	0.73950	12.16800
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.02981	0.68892	12.19450
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.02897	0.64979	12.17470
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.03157	0.60845	12.18030
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.03590	0.58371	12.20130
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.04500	0.94589	12.03430

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (RF)**	0.02216	0.51821	7.26342
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02787	0.34276	7.51380
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01755	0.45446	7.45358
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01877	0.42493	7.53597
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01839	0.40233	7.55198
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02144	0.37377	7.57896
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02457	0.35509	7.59735
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02495	0.54600	7.13194

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00349	0.00345	0.00378
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02843	0.02914	0.03314
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00600	0.00599	0.00677
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00923	0.00923	0.01040
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01174	0.01185	0.01340
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01737	0.01778	0.02005
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02294	0.02323	0.02663
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00273	0.00270	0.00304

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00056	-0.00058	-0.00036
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01016	-0.00988	-0.00600
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00186	-0.00188	-0.00131
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00244	-0.00248	-0.00155
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00384	-0.00380	-0.00250
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00585	-0.00550	-0.00370
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00798	-0.00778	-0.00489
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00040	-0.00041	-0.00020

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ls__mux2_1	0.11522	0.11512	0.00583	0.11156

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00375	0.00677

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (RR)	-	0.01596	0.28219	2.64816
	A1->Y (RR)	-	0.01936	0.28636	2.65204
	S0->Y (RR)	(!A0 * A1)	0.05247	0.28700	0.59063
	S0->Y (FR)	(A0 * !A1)	0.04147	0.44509	3.44876

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (FF)	-	0.01787	0.25360	2.32070
	A1->Y (FF)	-	0.01569	0.25122	2.32327
	S0->Y (FF)	(!A0 * A1)	0.08410	0.42129	2.59084
	S0->Y (RF)	(A0 * !A1)	0.02434	0.27203	1.62894

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00343	-0.00343	-0.00343
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00225	-0.00225	-0.00225
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00455	0.00431	0.00804
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00215	-0.00263	0.00105

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00343	0.00343	0.00343
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00225	0.00225	0.00225
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00065	0.00020	0.00399
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00935	0.00908	0.01253

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00084	-0.00084	-0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00084	0.00084	0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00101	-0.00101	-0.00101

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00101	0.00101	0.00101

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00077	-0.00122	0.00253
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00075	-0.00118	0.00251

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00724	0.00695	0.01047
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00666	0.00643	0.01011

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__nand2_1	6.34920
sky130_osu_sc_12T_ls__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nand2_1	0.00282	0.00281	0.82613
sky130_osu_sc_12T_ls__nand2_l	0.00218	0.00221	0.59286

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00129	0.00452
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00024	0.00060

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (FR)	0.04104	0.87948	12.13210
	B->Y (FR)	0.04686	0.84659	11.67860
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.04578	0.94760	12.03230
	B->Y (FR)	0.05456	0.95480	12.02180

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (RF)	0.03329	0.65285	8.99239
	B->Y (RF)	0.03772	0.63802	8.59365
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.03696	0.69709	8.86056
	B->Y (RF)	0.04113	0.68234	8.41137

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00370	0.00365	0.00396
	B	0.00000	0.00000	0.00000
	B	0.00467	0.00414	0.00490
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00277	0.00275	0.00306
	B	0.00000	0.00000	0.00000
	B	0.00345	0.00341	0.00372

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00032	-0.00036	-0.00017
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00038	-0.00025
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00021	-0.00025	-0.00004
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00027	-0.00012

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00234	-0.00234	-0.00236
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00166	-0.00166	-0.00167

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00236	0.00238	0.00237
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00166	0.00169	0.00167

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00217	-0.00219	-0.00218
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00156	-0.00157	-0.00156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00220	0.00220	0.00218
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00157	0.00158	0.00156

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__nor2_1	6.34920
sky130_osu_sc_12T_ls__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nor2_1	0.00277	0.00305	0.44118
sky130_osu_sc_12T_ls__nor2_l	0.00209	0.00231	0.31694

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00132	0.00226
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00024	0.00030

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (FR)	0.08904	1.06594	11.83390
	B->Y (FR)	0.07195	1.05259	12.06030
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.09575	1.15071	11.67180
	B->Y (FR)	0.08208	1.13848	11.88760

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (RF)	0.02857	0.43839	5.17786
	B->Y (RF)	0.02347	0.42802	5.16115
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.03040	0.45995	5.05741
	B->Y (RF)	0.02600	0.45182	5.04285

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00484	0.00475	0.00486
	B	0.00000	0.00000	0.00000
	B	0.00382	0.00370	0.00412
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00350	0.00343	0.00356
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00280	0.00322

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00047	0.00028	0.00062
	B	0.00000	0.00000	0.00000
	B	-0.00044	-0.00046	-0.00014
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00033	0.00021	0.00057
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00028	0.00003

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00179	-0.00202	-0.00201
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00122	-0.00138	-0.00137

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00200	0.00203	0.00201
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00137	0.00138	0.00137

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00095	-0.00096	-0.00095
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00067	-0.00067	-0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00100	0.00101	0.00097
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00070	0.00071	0.00068

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__oai21_l	0.00281	0.00290	0.00247	0.43695

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00089	0.00256

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (FR)	0.10203	1.08147	12.04150
	A1->Y (FR)	0.12329	1.09989	11.81200
	B0->Y (FR)	0.05735	0.85366	10.19260

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (RF)	0.04526	0.52729	5.97598
	A1->Y (RF)	0.05317	0.52825	5.91808
	B0->Y (RF)	0.03561	0.55094	6.56885

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00525	0.00512	0.00548
	A1	0.00000	0.00000	0.00000
	A1	0.00632	0.00620	0.00629
	B0	0.00427	0.00411	0.00460

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00025	0.00018	0.00034
	A1	0.00000	0.00000	0.00000
	A1	0.00118	0.00098	0.00115
	B0	0.00154	0.00150	0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00095	-0.00096	-0.00096
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00200	-0.00205	-0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00209	-0.00210	-0.00209

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00101	0.00102	0.00097
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00203	0.00205	0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00210	0.00211	0.00210

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00173	-0.00196	-0.00195
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00198	-0.00204	-0.00203
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00206	-0.00208	-0.00207

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00194	0.00197	0.00195
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00202	0.00206	0.00203
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00207	0.00208	0.00207

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00174	-0.00174	-0.00177

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00178	0.00182	0.00178

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_1	0.00264	0.00277	0.00295	0.00291	0.45984

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00198	0.00452

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (FR)	0.13184	1.10307	11.91400
	A1->Y (FR)	0.11475	1.08908	12.15360
	B0->Y (FR)	0.07632	1.05065	12.11950
	B1->Y (FR)	0.09522	1.06453	11.88260

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (RF)	0.07130	0.57050	6.20867
	A1->Y (RF)	0.05851	0.55377	6.17341
	B0->Y (RF)	0.04959	0.57683	6.77621
	B1->Y (RF)	0.06303	0.58974	6.83672

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00804	0.00794	0.00803
	A1	0.00697	0.00685	0.00719
	B0	0.00510	0.00501	0.00534
	B1	0.00624	0.00612	0.00620

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00178	0.00159	0.00173
	A1	0.00094	0.00086	0.00098
	B0	0.00091	0.00084	0.00111
	B1	0.00178	0.00160	0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00176	-0.00197	-0.00197
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00176	-0.00197	-0.00197
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00191	-0.00198	-0.00197
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00201	-0.00201	-0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00196	0.00198	0.00197
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00197	0.00198	0.00197
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00196	0.00198	0.00197
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00201	0.00202	0.00201

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00093	-0.00094	-0.00093
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00093	-0.00094	-0.00093
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00191	-0.00196	-0.00196
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00200	-0.00201	-0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00098	0.00099	0.00094
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00098	0.00099	0.00094
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00195	0.00196	0.00196
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00200	0.00202	0.00201

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00094	-0.00095	-0.00094
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00093	-0.00095	-0.00094
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00225	-0.00231	-0.00230
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00228	-0.00229	-0.00233

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00099	0.00100	0.00096
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00099	0.00100	0.00096
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00230	0.00231	0.00230
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00234	0.00239	0.00234

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00174	-0.00196	-0.00196
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00174	-0.00195	-0.00196
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00229	-0.00236	-0.00235
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00231	-0.00233	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00195	0.00197	0.00196
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00195	0.00195	0.00196
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00235	0.00237	0.00235
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00237	0.00241	0.00239

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__or2_1	8.30280
sky130_osu_sc_12T_ls__or2_2	10.25640
sky130_osu_sc_12T_ls__or2_4	14.16360
sky130_osu_sc_12T_ls__or2_8	21.97800
sky130_osu_sc_12T_ls__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__or2_1	0.00312	0.00290	0.83993
sky130_osu_sc_12T_ls__or2_2	0.00312	0.00290	1.73553
sky130_osu_sc_12T_ls__or2_4	0.00312	0.00290	3.44809
sky130_osu_sc_12T_ls__or2_8	0.00311	0.00290	6.71966
sky130_osu_sc_12T_ls__or2_l	0.00234	0.00220	0.60066

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00212	0.00288
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00291	0.00513
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00450	0.00965
sky130_osu_sc_12T_ls__or2_8	0.00000	0.00768	0.01869
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00043	0.00059

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (RR)	0.08173	0.73065	6.92661
	B->Y (RR)	0.07355	0.70302	6.80178
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.08551	0.63071	7.06408
	B->Y (RR)	0.07669	0.60743	6.95335
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.11004	0.60596	7.42364
	B->Y (RR)	0.10119	0.58674	7.33151
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.15881	0.63828	7.86203
	B->Y (RR)	0.14975	0.62441	7.79700
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.08766	0.80045	6.86601
	B->Y (RR)	0.08004	0.77453	6.76292

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (FF)	0.16239	0.70343	5.84668
	B->Y (FF)	0.13657	0.67943	5.69857
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.19832	0.71581	6.26468
	B->Y (FF)	0.17292	0.69940	6.15600
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.28402	0.79923	6.81327
	B->Y (FF)	0.25859	0.78210	6.75162
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.45526	0.98931	7.45644
	B->Y (FF)	0.42988	0.97027	7.47873
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.17048	0.73713	5.71189
	B->Y (FF)	0.14683	0.71443	5.60597

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00371	0.00321	0.00573
	B	0.00000	0.00000	0.00000
	B	0.00283	0.00256	0.00642
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00617	0.00589	0.00842
	B	0.00000	0.00000	0.00000
	B	0.00525	0.00524	0.00814
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01170	0.01190	0.01444
	B	0.00000	0.00000	0.00000
	B	0.01077	0.01132	0.01445
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02274	0.02369	0.02726
	B	0.00000	0.00000	0.00000
	B	0.02180	0.02316	0.02746
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00282	0.00254	0.00481
	B	0.00000	0.00000	0.00000
	B	0.00222	0.00203	0.00553

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00821	0.00793	0.00942
	B	0.00000	0.00000	0.00000
	B	0.00688	0.00684	0.00983
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01006	0.01011	0.01150
	B	0.00000	0.00000	0.00000
	B	0.00870	0.00897	0.01178
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01463	0.01519	0.01656
	B	0.00000	0.00000	0.00000
	B	0.01329	0.01400	0.01670
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02443	0.02509	0.02694
	B	0.00000	0.00000	0.00000
	B	0.02325	0.02385	0.02694
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00610	0.00590	0.00747
	B	0.00000	0.00000	0.00000
	B	0.00518	0.00523	0.00810

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00182	-0.00204	-0.00203
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00181	-0.00204	-0.00203
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00182	-0.00204	-0.00203
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00182	-0.00204	-0.00203
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00123	-0.00139	-0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00202	0.00205	0.00203
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00202	0.00204	0.00203
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00202	0.00206	0.00203
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00202	0.00206	0.00203
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00138	0.00140	0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00095	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00095	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00095	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00095	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00065	-0.00066	-0.00065

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00097
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00102	0.00102	0.00097
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00097
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00097
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00069	0.00070	0.00067

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__tbufi_1	8.30280
sky130_osu_sc_12T_ls__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tbufi_1	0.00302	0.00395	0.45619
sky130_osu_sc_12T_ls__tbufi_l	0.00232	0.00302	0.31755

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00143	0.00452
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00030	0.00060

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (FR)	0.06648	1.03836	12.05440
	OE->Y (FR)	0.06111	0.31402	4.86180
	OE->Y (RR)	0.10288	0.87062	6.95330
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.07912	1.13669	11.90360
	OE->Y (FR)	0.06236	0.31395	4.86169
	OE->Y (RR)	0.11247	0.97177	6.91973

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (RF)	0.03234	0.53362	6.44785
	OE->Y (FF)	0.06278	0.31692	4.86170
	OE->Y (RF)	0.03056	0.51014	6.03661
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.03639	0.56187	6.22401
	OE->Y (FF)	0.06347	0.31512	4.86168
	OE->Y (RF)	0.03384	0.53366	5.77926

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00356	0.00344	0.00381
	OE	0.00000	0.00000	0.00000
	OE	0.00349	0.00310	0.00671
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00269	0.00261	0.00298
	OE	0.00000	0.00000	0.00000
	OE	0.00254	0.00226	0.00569

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00047	-0.00018
	OE	0.00000	0.00000	0.00000
	OE	0.00222	0.00180	0.00570
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00027	-0.00028	0.00000
	OE	0.00000	0.00000	0.00000
	OE	0.00156	0.00127	0.00489

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00164	-0.00167	-0.00165
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00148	-0.00151	-0.00148
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00119	-0.00119	-0.00119
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00107	-0.00109	-0.00107

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00164	0.00167	0.00165
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00151	0.00153	0.00149
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00119	0.00119	0.00119
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00110	0.00110	0.00108

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00129	0.00088	0.00480
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00114	0.00075	0.00466
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00091	0.00062	0.00427
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00078	0.00051	0.00414

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00418	0.00386	0.00752
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00435	0.00401	0.00762
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00315	0.00297	0.00645
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00327	0.00308	0.00654

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__tnbufi_1	8.30280
sky130_osu_sc_12T_ls__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tnbufi_1	0.00302	0.00448	0.45618
sky130_osu_sc_12T_ls__tnbufi_l	0.00222	0.00339	0.31759

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00208	0.00257
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00035	0.00045

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (FR)	0.06707	1.03827	12.05410
	OE->Y (RR)	0.02797	0.31358	4.86193
	OE->Y (FR)	0.07908	1.04714	11.81340
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.07769	1.13484	11.90160
	OE->Y (RR)	0.03041	0.31332	4.86168
	OE->Y (FR)	0.08752	1.14531	11.68650

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (RF)	0.03164	0.53321	6.44755
	OE->Y (RF)	0.02772	0.31356	4.86196
	OE->Y (FF)	0.06863	0.56699	4.77175
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.03467	0.56046	6.22319
	OE->Y (RF)	0.03027	0.31331	4.86171
	OE->Y (FF)	0.07549	0.60045	4.59046

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00369	0.00358	0.00394
	OE	0.00000	0.00000	0.00000
	OE	0.00875	0.00867	0.01268
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00276	0.00268	0.00306
	OE	0.00000	0.00000	0.00000
	OE	0.00663	0.00658	0.01027

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00061	-0.00063	-0.00034
	OE	0.00000	0.00000	0.00000
	OE	0.00762	0.00751	0.01113
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00045	-0.00045	-0.00016
	OE	0.00000	0.00000	0.00000
	OE	0.00577	0.00570	0.00914

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00135	-0.00138	-0.00136
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00120	-0.00122	-0.00120
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00093	-0.00095	-0.00093
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00082	-0.00084	-0.00082

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00135	0.00138	0.00136
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00123	0.00124	0.00121
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00093	0.00095	0.00093
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00084	0.00085	0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00226	-0.00286	0.00114
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00217	-0.00280	0.00117
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00155	-0.00200	0.00170
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00150	-0.00194	0.00171

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00656	0.00647	0.01047
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00644	0.00636	0.01037
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00501	0.00495	0.00867
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00496	0.00490	0.00861

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xnor2_l	0.00605	0.00516	0.46867

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00407	0.00709

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (RR)	B	0.13241	0.91743	7.17211
	A->Y (FR)	!B	0.09042	1.06554	12.16420
	B->Y (RR)	A	0.10879	0.89392	7.14380
	B->Y (FR)	!A	0.10906	1.07667	11.91780

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (FF)	B	0.11368	0.65592	5.14020
	A->Y (RF)	!B	0.04425	0.52658	6.14343
	B->Y (FF)	A	0.10174	0.64396	5.13082
	B->Y (RF)	!A	0.05240	0.53754	6.15530

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00370	0.00317	0.00673
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00899	0.00856	0.01262
	B	A	0.00000	0.00000	0.00000
	B	A	0.00168	0.00136	0.00518
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00947	0.00921	0.01307

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01050	0.00997	0.01339
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00246	0.00195	0.00587
	B	A	0.00000	0.00000	0.00000
	B	A	0.00960	0.00952	0.01314
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00302	0.00247	0.00642

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xor2_l	0.00606	0.00520	0.43629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00407	0.00514

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (RR)	!B	0.14057	0.92065	7.02449
	A->Y (FR)	B	0.11097	1.08014	11.77870
	B->Y (RR)	!A	0.11505	0.90546	7.01343
	B->Y (FR)	A	0.12172	1.09285	11.78550

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (FF)	!B	0.11157	0.64432	4.94216
	A->Y (RF)	B	0.04463	0.54644	6.31073
	B->Y (FF)	!A	0.10558	0.63904	4.94447
	B->Y (RF)	A	0.05071	0.52618	5.91055

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01037	0.01002	0.01381
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00228	0.00134	0.00489
	B	A	0.00000	0.00000	0.00000
	B	A	0.01052	0.01026	0.01405
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00160	0.00123	0.00501

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00195	0.00127	0.00528
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01104	0.01084	0.01416
	B	A	0.00000	0.00000	0.00000
	B	A	0.00198	0.00136	0.00523
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00973	0.00970	0.01329

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__ant	4.39560
sky130_osu_sc_12T_ls__tiehi	4.39560
sky130_osu_sc_12T_ls__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ls__ant	0.20642
sky130_osu_sc_12T_ls__tiehi	0.00000
sky130_osu_sc_12T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__ant	0.00000	99891.20000	199782.00000
sky130_osu_sc_12T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__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_ls__ant	0.00000	0.00000	0.00000
	-0.00170	0.01850	0.29661

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__ant	0.00000	0.00000	0.00000
	1.73960	1.65468	0.37481