sky130_osu_sc_15T_ls_tt_1P80_25C.ccs Library

Cell Groups
SKY130_OSU_SC_15T_LS__ADDFx
SKY130_OSU_SC_15T_LS__ADDHx
SKY130_OSU_SC_15T_LS__AND2x
SKY130_OSU_SC_15T_LS__AOI21
SKY130_OSU_SC_15T_LS__AOI22
SKY130_OSU_SC_15T_LS__BUFx
SKY130_OSU_SC_15T_LS__DFFRx
SKY130_OSU_SC_15T_LS__DFFSRx
SKY130_OSU_SC_15T_LS__DFFSx
SKY130_OSU_SC_15T_LS__DFFx
SKY130_OSU_SC_15T_LS__INVx
SKY130_OSU_SC_15T_LS__MUX2
SKY130_OSU_SC_15T_LS__NAND2x
SKY130_OSU_SC_15T_LS__NOR2x
SKY130_OSU_SC_15T_LS__OAI21
SKY130_OSU_SC_15T_LS__OAI22
SKY130_OSU_SC_15T_LS__OR2x
SKY130_OSU_SC_15T_LS__TBUFIx
SKY130_OSU_SC_15T_LS__TNBUFIx
SKY130_OSU_SC_15T_LS__XNOR2
SKY130_OSU_SC_15T_LS__XOR2
SKY130_OSU_SC_15T_LS_x

SKY130_OSU_SC_15T_LS__ADDFx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__addf_1	39.07200
sky130_osu_sc_15T_ls__addf_l	39.07200

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_15T_ls__addf_1	0.01578	0.01578	0.01220	1.70343	0.79900	1.62932
sky130_osu_sc_15T_ls__addf_l	0.01577	0.01577	0.01222	1.02504	0.80071	1.04760

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00269	0.00313
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00757	0.01191

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.15452	1.72232	24.37670
	B->CO (RR)	0.13732	1.65549	23.56170
	CI->CO (RR)	0.14682	1.75030	24.92130
	CON->CO (FR)	0.03035	0.80790	11.87900
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.16019	1.59416	18.81170
	B->CO (RR)	0.15403	1.55556	18.52550
	CI->CO (RR)	0.15248	1.62291	19.40250
	CON->CO (FR)	0.03873	0.91239	11.88500

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.23121	2.26196	31.53780
	B->CO (FF)	0.20792	2.15790	30.42670
	CI->CO (FF)	0.20330	2.24416	31.80650
	CON->CO (RF)	0.02305	0.58400	8.56193
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.22307	1.89190	21.95190
	B->CO (FF)	0.20023	1.80971	21.38620
	CI->CO (FF)	0.19520	1.87484	22.24440
	CON->CO (RF)	0.02471	0.57283	7.52293

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.18030	1.07568	11.37650
	B->CON (FR)	0.15830	1.02007	11.19420
	CI->CON (FR)	0.15253	1.06005	11.68880
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.17029	1.06663	11.38210
	B->CON (FR)	0.14894	1.01159	11.19950
	CI->CON (FR)	0.14241	1.05051	11.69440

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.09056	0.60470	6.57043
	B->CON (RF)	0.08715	0.61255	6.80447
	CI->CON (RF)	0.08283	0.63647	7.18620
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.08687	0.60139	6.57496
	B->CON (RF)	0.08370	0.60958	6.80882
	CI->CON (RF)	0.07913	0.63321	7.19078

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.33374	2.12773	25.24810
	B->S (-R)	0.33925	2.11485	24.58450
	CI->S (-R)	0.30376	2.10535	25.51350
	CON->S (RR)	0.08803	0.68335	7.12124
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.32068	1.95289	20.34730
	B->S (-R)	0.32669	1.95158	20.00000
	CI->S (-R)	0.29066	1.93133	20.62850
	CON->S (RR)	0.09066	0.75841	7.04234

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addf_1	A->S (-F)	0.25700	1.51572	17.00550
	B->S (-F)	0.26530	1.47873	16.57680
	CI->S (-F)	0.24881	1.53968	17.54870
	CON->S (FF)	0.10877	0.70087	6.64742
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.23903	1.33416	13.12440
	B->S (-F)	0.23728	1.29413	13.07700
	CI->S (-F)	0.23084	1.35929	13.71160
	CON->S (FF)	0.10197	0.68849	5.98550

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00323	0.00345	0.00781
	B	0.00490	0.00493	0.00854
	CI	0.00504	0.00533	0.00981
sky130_osu_sc_15T_ls__addf_l	A	0.00238	0.00239	0.00502
	B	0.00404	0.00390	0.00621
	CI	0.00419	0.00429	0.00713

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01303	0.01352	0.02282
	B	0.01365	0.01408	0.02203
	CI	0.01095	0.01141	0.02104
sky130_osu_sc_15T_ls__addf_l	A	0.01222	0.01250	0.01776
	B	0.01282	0.01309	0.01736
	CI	0.01115	0.01164	0.01623

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01303	0.01327	0.01721
	B	0.01363	0.01387	0.01704
	CI	0.01197	0.01240	0.01541
sky130_osu_sc_15T_ls__addf_l	A	0.01221	0.01241	0.01630
	B	0.01282	0.01301	0.01614
	CI	0.01114	0.01153	0.01507

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00375	0.00358	0.00513
	B	0.00485	0.00479	0.00669
	CI	0.00503	0.00521	0.00756
sky130_osu_sc_15T_ls__addf_l	A	0.00290	0.00264	0.00433
	B	0.00401	0.00385	0.00573
	CI	0.00417	0.00427	0.00654

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01303	0.01351	0.02232
	B	0.01364	0.01406	0.02155
	CI	0.01095	0.01144	0.02051
sky130_osu_sc_15T_ls__addf_l	A	0.01222	0.01250	0.01791
	B	0.01283	0.01310	0.01752
	CI	0.01115	0.01165	0.01643

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02907	0.02926	0.03464
	B	0.02585	0.02551	0.03461
	CI	0.02360	0.02358	0.02913
sky130_osu_sc_15T_ls__addf_l	A	0.02789	0.02784	0.03340
	B	0.02469	0.02434	0.03389
	CI	0.02246	0.02233	0.02825

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__addh_1	23.19900
sky130_osu_sc_15T_ls__addh_l	23.19900

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_15T_ls__addh_1	0.00775	0.00855	1.66406	0.86646	1.70461
sky130_osu_sc_15T_ls__addh_l	0.00775	0.00855	1.07850	0.86237	1.08151

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00251	0.00290
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00856	0.01166

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (RR)	0.10598	0.69998	6.99997
	B->CO (RR)	0.10943	0.69496	7.05375
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.11029	0.78337	7.07539
	B->CO (RR)	0.11378	0.78171	7.12705

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CO (FF)	0.09452	0.67209	6.62452
	B->CO (FF)	0.10096	0.68724	6.67104
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.08953	0.62727	5.43683
	B->CO (FF)	0.09561	0.64267	5.48542

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (RR)	B	0.14946	0.58011	3.62857
	A->CON (FR)	!B	0.09903	0.98515	11.63140
	B->CON (RR)	A	0.15288	0.57493	3.68288
	B->CON (FR)	!A	0.12079	1.00057	11.42880
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.13733	0.55905	3.56054
	A->CON (FR)	!B	0.08978	0.97478	11.58810
	B->CON (RR)	A	0.14079	0.55694	3.60970
	B->CON (FR)	!A	0.11157	0.98765	11.38530

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->CON (FF)	B	0.14024	0.71801	5.76155
	A->CON (RF)	!B	0.05372	0.60690	7.34978
	B->CON (FF)	A	0.13922	0.74608	6.03869
	B->CON (RF)	!A	0.06479	0.60418	7.09954
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.13048	0.69776	5.66111
	A->CON (RF)	!B	0.05029	0.60220	7.32611
	B->CON (FF)	A	0.12936	0.72614	5.93849
	B->CON (RF)	!A	0.06141	0.59984	7.07602

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (RR)	!B	0.10986	1.67652	24.49480
	A->S (FR)	B	0.19705	1.76817	22.60640
	B->S (RR)	!A	0.12101	1.63664	23.61910
	B->S (FR)	A	0.19674	1.83378	23.52500
	CON->S (FR)	-	0.03293	0.82492	12.11230
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.11190	1.56255	19.60070
	A->S (FR)	B	0.19289	1.64244	17.69740
	B->S (RR)	!A	0.12321	1.53445	19.00820
	B->S (FR)	A	0.19233	1.69773	18.33180
	CON->S (FR)	-	0.03897	0.91954	12.13150

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__addh_1	A->S (FF)	!B	0.14242	2.04951	29.84510
	A->S (RF)	B	0.18659	1.34137	16.08760
	B->S (FF)	!A	0.16427	2.06652	29.68260
	B->S (RF)	A	0.19003	1.33459	16.14190
	CON->S (RF)	-	0.02176	0.57140	8.40712
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.13425	1.75335	21.92510
	A->S (RF)	B	0.17531	1.16046	11.31960
	B->S (FF)	!A	0.15616	1.77143	21.73470
	B->S (RF)	A	0.17876	1.15746	11.37070
	CON->S (RF)	-	0.02338	0.57462	7.65632

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00616	0.00592	0.00856
	B	0.00000	0.00000	0.00000
	B	0.00554	0.00522	0.00769
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00534	0.00505	0.00858
	B	0.00000	0.00000	0.00000
	B	0.00472	0.00435	0.00745

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00934	0.00906	0.01263
	B	0.00000	0.00000	0.00000
	B	0.00973	0.00990	0.01363
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00855	0.00825	0.01180
	B	0.00000	0.00000	0.00000
	B	0.00894	0.00902	0.01264

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00615	0.00591	0.00894
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00826	0.00825	0.00954
	B	A	0.00000	0.00000	0.00000
	B	A	0.00553	0.00523	0.00801
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00928	0.00922	0.00998
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00533	0.00504	0.00841
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00770	0.00770	0.00877
	B	A	0.00000	0.00000	0.00000
	B	A	0.00472	0.00434	0.00736
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00872	0.00854	0.00921

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00934	0.00909	0.01286
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00127	0.00127	0.00186
	B	A	0.00000	0.00000	0.00000
	B	A	0.00972	0.00989	0.01361
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00215	0.00204	0.00229
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00856	0.00827	0.01204
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00052	0.00053	0.00098
	B	A	0.00000	0.00000	0.00000
	B	A	0.00894	0.00903	0.01272
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00142	0.00129	0.00168

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00935	0.00908	0.01277
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00129	0.00134	0.00203
	B	A	0.00000	0.00000	0.00000
	B	A	0.00973	0.00991	0.01383
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00216	0.00211	0.00269
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00855	0.00827	0.01192
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00052	0.00053	0.00117
	B	A	0.00000	0.00000	0.00000
	B	A	0.00894	0.00903	0.01290
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00143	0.00130	0.00161

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00616	0.00591	0.00875
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00826	0.00840	0.00992
	B	A	0.00000	0.00000	0.00000
	B	A	0.00554	0.00522	0.00774
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00930	0.00936	0.01052
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00534	0.00505	0.00847
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00769	0.00774	0.00885
	B	A	0.00000	0.00000	0.00000
	B	A	0.00472	0.00435	0.00740
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00873	0.00869	0.00935

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__and2_1	10.37850
sky130_osu_sc_15T_ls__and2_2	12.82050
sky130_osu_sc_15T_ls__and2_4	17.70450
sky130_osu_sc_15T_ls__and2_6	22.58850
sky130_osu_sc_15T_ls__and2_8	27.47250
sky130_osu_sc_15T_ls__and2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__and2_1	0.00417	0.00427	1.69545
sky130_osu_sc_15T_ls__and2_2	0.00417	0.00428	3.29265
sky130_osu_sc_15T_ls__and2_4	0.00417	0.00428	6.32319
sky130_osu_sc_15T_ls__and2_6	0.00420	0.00428	9.31241
sky130_osu_sc_15T_ls__and2_8	0.00418	0.00428	12.09578
sky130_osu_sc_15T_ls__and2_l	0.00316	0.00327	1.02778

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00118	0.00180
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00182	0.00205
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00311	0.00335
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00439	0.00490
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00568	0.00645
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00722	0.01145

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (RR)	0.08111	0.63431	6.84976
	B->Y (RR)	0.08595	0.63831	6.85636
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.09276	0.57564	6.89173
	B->Y (RR)	0.09751	0.57350	6.89806
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.12743	0.59147	7.21800
	B->Y (RR)	0.13216	0.58005	7.21281
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.16099	0.62969	7.48796
	B->Y (RR)	0.16575	0.61190	7.47139
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.19407	0.67229	7.72824
	B->Y (RR)	0.19884	0.65017	7.69083
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.09174	0.72859	6.68512
	B->Y (RR)	0.09671	0.73157	6.69042

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__and2_1	A->Y (FF)	0.07255	0.60304	6.27526
	B->Y (FF)	0.07723	0.62038	6.34161
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.08480	0.58261	6.37012
	B->Y (FF)	0.08985	0.59648	6.43157
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.11877	0.61577	6.64023
	B->Y (FF)	0.12331	0.62524	6.70931
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.15504	0.66068	6.89790
	B->Y (FF)	0.15892	0.66731	6.94105
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.18864	0.69978	7.03239
	B->Y (FF)	0.19215	0.70484	7.07538
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.08268	0.63682	5.73392
	B->Y (FF)	0.08967	0.65653	5.81720

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00456	0.00434	0.01692
	B	0.00000	0.00000	0.00000
	B	0.00465	0.00407	0.01219
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00891	0.00901	0.02090
	B	0.00000	0.00000	0.00000
	B	0.00899	0.00881	0.01668
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01848	0.01911	0.03054
	B	0.00000	0.00000	0.00000
	B	0.01859	0.01909	0.02704
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02826	0.02934	0.04088
	B	0.00000	0.00000	0.00000
	B	0.02837	0.02937	0.03675
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03802	0.03948	0.05179
	B	0.00000	0.00000	0.00000
	B	0.03824	0.03939	0.04900
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00329	0.00314	0.01235
	B	0.00000	0.00000	0.00000
	B	0.00337	0.00291	0.00907

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.01140	0.01185	0.02329
	B	0.00000	0.00000	0.00000
	B	0.01288	0.01314	0.02373
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01444	0.01548	0.02667
	B	0.00000	0.00000	0.00000
	B	0.01595	0.01669	0.02714
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02208	0.02418	0.03510
	B	0.00000	0.00000	0.00000
	B	0.02359	0.02515	0.03544
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02975	0.03285	0.04401
	B	0.00000	0.00000	0.00000
	B	0.03120	0.03367	0.04401
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03770	0.04102	0.05298
	B	0.00000	0.00000	0.00000
	B	0.03913	0.04163	0.05247
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00867	0.00886	0.01670
	B	0.00000	0.00000	0.00000
	B	0.00971	0.00974	0.01707

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00422	-0.00424	-0.00425
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00422	-0.00424	-0.00425
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00422	-0.00425	-0.00425
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00425	-0.00427	-0.00428
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00422	-0.00424	-0.00425
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00299	-0.00300	-0.00301

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00434	0.00427
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00434	0.00427
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00434	0.00427
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00427	0.00436	0.00429
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00424	0.00434	0.00427
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00301	0.00308	0.00302

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00404	-0.00402
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00404	-0.00402
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00403	-0.00402
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00404	-0.00402
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00401	-0.00404	-0.00402
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00285	-0.00288	-0.00286

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00405	0.00409	0.00403
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00405	0.00409	0.00403
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00405	0.00409	0.00403
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00405	0.00409	0.00403
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00405	0.00409	0.00403
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00289	0.00291	0.00287

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__aoi21_l	0.00393	0.00409	0.00398	0.78140

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00062	0.00078

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (FR)	0.09502	1.00163	11.35410
	A1->Y (FR)	0.07941	0.94787	10.95260
	B0->Y (FR)	0.07017	0.98502	11.66880

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi21_l	A0->Y (RF)	0.04895	0.54264	6.24031
	A1->Y (RF)	0.04451	0.56416	6.67883
	B0->Y (RF)	0.02947	0.52986	6.46155

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01010	0.00996	0.01030
	A1	0.00000	0.00000	0.00000
	A1	0.00850	0.00834	0.00894
	B0	0.00787	0.00751	0.00931

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00188	0.00150	0.00229
	A1	0.00000	0.00000	0.00000
	A1	0.00192	0.00159	0.00273
	B0	-0.00099	-0.00101	0.00022

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00344	-0.00366	-0.00366
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00372	-0.00374	-0.00373
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00372	-0.00374	-0.00373

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00365	0.00366	0.00366
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00372	0.00375	0.00374
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00376	0.00375	0.00374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00340	-0.00362	-0.00361
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00367	-0.00369	-0.00367
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00397	-0.00400	-0.00400

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00360	0.00362	0.00361
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00367	0.00369	0.00368
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00399	0.00401	0.00401

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00166	-0.00170	-0.00167

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00182	0.00182	0.00171

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00392	0.00407	0.00423	0.00403	0.79707

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00074	0.00155

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (FR)	0.11671	1.02009	11.36100
	A1->Y (FR)	0.10390	0.99683	11.25580
	B0->Y (FR)	0.07196	0.97219	11.52950
	B1->Y (FR)	0.08510	0.99860	11.68900

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__aoi22_l	A0->Y (RF)	0.06474	0.56383	6.33378
	A1->Y (RF)	0.06022	0.58546	6.77573
	B0->Y (RF)	0.03372	0.55435	6.74472
	B1->Y (RF)	0.03821	0.53226	6.30433

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.01237	0.01225	0.01283
	A1	0.01078	0.01062	0.01118
	B0	0.00844	0.00825	0.00985
	B1	0.00996	0.00972	0.01142

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00401	0.00362	0.00438
	A1	0.00405	0.00370	0.00482
	B0	-0.00062	-0.00067	0.00053
	B1	-0.00053	-0.00069	0.00015

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00350	-0.00367	-0.00366
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00373	-0.00375	-0.00373
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00372	-0.00375	-0.00373
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00372	-0.00375	-0.00373

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00365	0.00369	0.00366
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00373	0.00375	0.00374
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00376	0.00375	0.00374
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00376	0.00375	0.00374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00344	-0.00361	-0.00360
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00366	-0.00368	-0.00367
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00396	-0.00399	-0.00399
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00396	-0.00399	-0.00399

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00358	0.00362	0.00360
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00367	0.00368	0.00368
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00398	0.00400	0.00400
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00398	0.00400	0.00400

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00167	-0.00171	-0.00168
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00167	-0.00168	-0.00167
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00410	-0.00411	-0.00413
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00410	-0.00411	-0.00413

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00190	0.00190	0.00173
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00167	0.00168	0.00167
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00413	0.00416	0.00414
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00413	0.00416	0.00414

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00168	-0.00172	-0.00169
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00168	-0.00169	-0.00168
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00380	-0.00381	-0.00380
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00380	-0.00381	-0.00380

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00192	0.00193	0.00175
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00168	0.00170	0.00168
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00383	0.00384	0.00381
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00383	0.00381	0.00381

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__buf_1	7.93650
sky130_osu_sc_15T_ls__buf_2	10.37850
sky130_osu_sc_15T_ls__buf_4	15.26250
sky130_osu_sc_15T_ls__buf_6	20.14650
sky130_osu_sc_15T_ls__buf_8	25.03050
sky130_osu_sc_15T_ls__buf_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__buf_1	0.00427	1.64928
sky130_osu_sc_15T_ls__buf_2	0.00430	3.28746
sky130_osu_sc_15T_ls__buf_4	0.00430	6.39945
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00431	12.22435
sky130_osu_sc_15T_ls__buf_l	0.00330	1.03090

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00103	0.00103
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00154	0.00180
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00257	0.00335
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00462	0.00645
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00591	0.00591

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	**A->Y (RR)**	0.06206	0.59830	6.64814
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.07035	0.53561	6.79149
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.09503	0.53719	7.13778
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.14246	0.59249	7.51610
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.07136	0.69153	6.54496

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__buf_1	**A->Y (FF)**	0.06850	0.58951	6.12391
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.08240	0.58822	6.57308
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.11683	0.62403	7.00090
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.18686	0.70710	7.41481
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.07941	0.62847	5.70340

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00425	0.00396	0.01428
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00859	0.00843	0.02293
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01816	0.01857	0.02838
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03731	0.03877	0.04807
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00316	0.00293	0.01098

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.01100	0.01125	0.02254
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01412	0.01488	0.02522
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02177	0.02348	0.03376
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03751	0.04011	0.05094
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00842	0.00851	0.01620

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00071	-0.00071	-0.00071

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
	0.00071	0.00071	0.00071

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffr_1	53.11350
sky130_osu_sc_15T_ls__dffr_l	53.11350

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_15T_ls__dffr_1	0.00404	0.00403	0.01187	1.54507	1.54147
sky130_osu_sc_15T_ls__dffr_l	0.00404	0.00403	0.01187	1.03598	1.02360

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00938	0.01394
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.01426	0.01882

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RR)	0.35257	1.43976	14.57850
	QN->Q (FR)	0.03780	0.92809	13.31370
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.34153	1.53741	13.95150
	QN->Q (FR)	0.04263	0.99629	13.00260

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->Q (RF)	0.32412	1.44644	15.26070
	QN->Q (RF)	0.02592	0.63748	9.16369
	RN->Q (FF)	0.23709	1.50933	17.21260
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.33108	1.58806	14.83020
	QN->Q (RF)	0.02647	0.62905	8.31880
	RN->Q (FF)	0.24460	1.65092	16.76720

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	CK->QN (RR)	0.28854	0.86071	6.87778
	RN->QN (FR)	0.20140	0.92393	8.82370
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.29177	0.94612	6.94503
	RN->QN (FR)	0.20499	1.00915	8.88284

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffr_1	**CK->QN (RF)**	0.29846	0.72121	4.34262
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.28080	0.70898	3.83723

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.07384	-0.09101	-0.18319
	setup	CK (R)	0.27760	0.30756	1.54810
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.07356	-0.09126	-0.18559
	setup	CK (R)	0.27993	0.30973	1.62750

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.13513	-0.40086	-1.56249
	setup	CK (R)	0.16174	0.40996	3.96166
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.13488	-0.40045	-1.63551
	setup	CK (R)	0.16193	0.40996	3.96213

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.07384	-0.09101	-0.18319
	setup	CK (R)	0.27760	0.30756	1.54810
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.07356	-0.09126	-0.18559
	setup	CK (R)	0.27993	0.30973	1.62750

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	hold	CK (R)	-0.13513	-0.40086	-1.56249
	setup	CK (R)	0.16174	0.40996	3.96166
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.13488	-0.40045	-1.63551
	setup	CK (R)	0.16193	0.40996	3.96213

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.23892	0.27038	1.63600
	removal	CK (R)	-0.05426	-0.06586	-0.13638
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.24160	0.27149	1.80049
	removal	CK (R)	-0.05426	-0.06586	-0.13638

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	recovery	CK (R)	0.23892	0.27038	1.63600
	removal	CK (R)	-0.05426	-0.06586	-0.13638
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.24160	0.27149	1.80049
	removal	CK (R)	-0.05426	-0.06586	-0.13638

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffr_1	min_pulse_width	RN ()	0.14088	0.47974	13.33370
	min_pulse_width	RN ()	0.14088	0.47974	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.13727	0.47974	13.33370
	min_pulse_width	RN ()	0.13727	0.47974	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_15T_ls__dffr_1	min_pulse_width	CK ()	0.16611	0.47974	13.33370
	min_pulse_width	CK ()	0.16611	0.47974	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.15169	0.47974	13.33370
	min_pulse_width	CK ()	0.16251	0.47974	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_15T_ls__dffr_1	min_pulse_width	CK ()	0.34996	0.47974	13.33370
	min_pulse_width	CK ()	0.13006	0.47974	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.34996	0.47974	13.33370
	min_pulse_width	CK ()	0.13006	0.47974	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01077	0.00813	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00944	0.00753	0.00193

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01266	0.01033	0.00000
	RN	-0.00145	-0.08387	-1.25150
	RN	0.02908	0.02691	0.00459
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01131	0.00987	0.00316
	RN	-0.00145	-0.06598	-0.83915
	RN	0.02772	0.02643	0.01977

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01266	0.01033	0.00000
	RN	-0.00145	-0.08375	-1.24859
	RN	0.02909	0.02691	0.00456
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01132	0.00989	0.00329
	RN	-0.00145	-0.06551	-0.82912
	RN	0.02772	0.02644	0.01993

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01074	0.00813	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00941	0.00750	0.00189

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00365	-0.00363
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01333	0.01257	0.01974
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00573	0.00507	0.01236
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00365	-0.00363
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01333	0.01257	0.01973
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00573	0.00507	0.01236

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00361	0.00365	0.00363
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02217	0.02174	0.02868
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01061	0.01028	0.01726
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00361	0.00365	0.00363
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02217	0.02174	0.02868
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01061	0.01028	0.01726

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00405	0.00352	0.01607
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01204	0.01119	0.02362
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00405	0.00352	0.01607
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01204	0.01118	0.02362

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01043	0.01034	0.02337
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02186	0.02138	0.03423
sky130_osu_sc_15T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01042	0.01034	0.02337
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02185	0.02138	0.03423

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	-0.00143	0.01082
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00663	0.00514	0.01759
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00125	-0.00184	0.01043
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	-0.00143	0.01082
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00663	0.00514	0.01759
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00125	-0.00184	0.01043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01596	0.01599	0.02889
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03444	0.03355	0.04659
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02617	0.02566	0.03777
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03363	0.03348	0.05650
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01814	0.01797	0.03042
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01596	0.01598	0.02889
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03444	0.03355	0.04659
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02617	0.02566	0.03777
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03363	0.03340	0.05650
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01814	0.01797	0.03042

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffsr_1	57.99750
sky130_osu_sc_15T_ls__dffsr_l	57.99750

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_15T_ls__dffsr_1	0.00399	0.00404	0.00885	0.01211	1.69853	1.71221
sky130_osu_sc_15T_ls__dffsr_l	0.00399	0.00404	0.00884	0.01211	1.02439	1.02495

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00442	0.00563
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00930	0.01051

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RR)	0.34057	1.45155	15.44760
	QN->Q (FR)	0.03324	0.86627	12.75430
	RN->Q (RR)	0.27362	1.39787	15.47310
	SN->Q (FR)	0.25413	1.52605	17.68210
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.34086	1.53553	13.81960
	QN->Q (FR)	0.04265	0.99059	12.89470
	RN->Q (RR)	0.27516	1.48347	13.85000
	SN->Q (FR)	0.25467	1.60767	16.01730

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->Q (RF)	0.37062	1.50519	15.99250
	QN->Q (RF)	0.02565	0.65851	9.68111
	RN->Q (FF)	0.24759	1.53794	17.95140
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.38341	1.63769	14.72390
	QN->Q (RF)	0.02642	0.62619	8.26327
	RN->Q (FF)	0.26075	1.66884	16.67580

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RR)	0.33508	0.90422	7.07635
	RN->QN (FR)	0.21291	0.93581	9.03571
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.34348	1.00383	7.01784
	RN->QN (FR)	0.22076	1.03597	8.96946

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffsr_1	CK->QN (RF)	0.29202	0.73719	4.85446
	RN->QN (RF)	0.22640	0.68516	4.88761
	SN->QN (FF)	0.20611	0.81174	7.08644
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.28275	0.71608	3.87138
	RN->QN (RF)	0.21760	0.66514	3.90009
	SN->QN (FF)	0.19724	0.78890	6.07896

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.07381	-0.09537	-0.25745
	setup	CK (R)	0.25882	0.28961	1.57370
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.07580	-0.09765	-0.25839
	setup	CK (R)	0.25973	0.28932	1.56587

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.15521	-0.42123	-1.84614
	setup	CK (R)	0.19124	0.43502	4.07213
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15527	-0.42149	-1.85000
	setup	CK (R)	0.19140	0.43404	4.07262

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.07381	-0.09537	-0.25745
	setup	CK (R)	0.25882	0.28961	1.57370
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.07580	-0.09765	-0.25839
	setup	CK (R)	0.25973	0.28932	1.56587

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	hold	CK (R)	-0.15521	-0.42123	-1.84614
	setup	CK (R)	0.19124	0.43502	4.07213
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.15527	-0.42149	-1.85000
	setup	CK (R)	0.19140	0.43404	4.07262

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.19993	0.22749	1.40557
	removal	CK (R)	-0.02737	-0.03130	-0.07746
	hold	SN (R)	-0.20128	-0.37996	-1.73740
	setup	SN (R)	0.22664	0.42495	7.04636
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.19879	0.22833	1.40033
	removal	CK (R)	-0.02737	-0.03130	-0.07746
	hold	SN (R)	-0.19261	-0.36902	-1.66691
	setup	SN (R)	0.22430	0.41489	6.96951

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.19993	0.22749	1.40557
	removal	CK (R)	-0.02737	-0.03130	-0.07746
	hold	SN (R)	-0.20170	-0.37996	-1.73740
	hold	SN (R)	-0.20128	-0.38214	-1.74404
	setup	SN (R)	0.22664	0.42431	6.94220
	setup	SN (R)	0.22318	0.42495	7.04636
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.19879	0.22833	1.40033
	removal	CK (R)	-0.02737	-0.03130	-0.07746
	hold	SN (R)	-0.19317	-0.36902	-1.66691
	hold	SN (R)	-0.19261	-0.37153	-1.68094
	setup	SN (R)	0.22430	0.41031	6.96951
	setup	SN (R)	0.21249	0.41489	6.94539

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	RN ()	0.16251	0.47974	13.33370
	min_pulse_width	RN ()	0.16611	0.47974	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.16251	0.47974	13.33370
	min_pulse_width	RN ()	0.15890	0.47974	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.04494	0.08598	6.78643
	removal	CK (R)	-0.01721	-0.06374	-0.35246
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04361	0.08554	6.57121
	removal	CK (R)	-0.01721	-0.06374	-0.35246

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	recovery	CK (R)	0.04494	0.08598	6.78643
	removal	CK (R)	-0.01721	-0.06374	-0.35246
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04361	0.08554	6.57121
	removal	CK (R)	-0.01721	-0.06374	-0.35246

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	min_pulse_width	SN ()	0.20216	0.47974	13.33370
	min_pulse_width	SN ()	0.20577	0.47974	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.20216	0.47974	13.33370
	min_pulse_width	SN ()	0.19134	0.47974	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_15T_ls__dffsr_1	min_pulse_width	CK ()	0.15169	0.47974	13.33370
	min_pulse_width	CK ()	0.18774	0.47974	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.14448	0.47974	13.33370
	min_pulse_width	CK ()	0.18413	0.47974	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_15T_ls__dffsr_1	min_pulse_width	CK ()	0.33194	0.47974	13.33370
	min_pulse_width	CK ()	0.16251	0.47974	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.33194	0.47974	13.33370
	min_pulse_width	CK ()	0.16251	0.47974	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01361	0.01078	-0.00094
	RN	0.02532	0.02272	-0.00791
	SN	-0.00145	-0.08877	-1.37581
	SN	0.02821	0.02543	-0.00626
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01241	0.01055	0.00528
	RN	0.02411	0.02248	0.01197
	SN	-0.00145	-0.06554	-0.82975
	SN	0.02701	0.02522	0.01283

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01461	0.01320	0.00094
	RN	-0.00145	-0.08877	-1.37580
	RN	0.03023	0.02875	0.01684
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01335	0.01204	0.00557
	RN	-0.00145	-0.06554	-0.82975
	RN	0.02893	0.02755	0.02125

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01461	0.01319	0.00070
	RN	-0.00145	-0.08920	-1.38687
	RN	0.03022	0.02874	0.01648
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01336	0.01203	0.00559
	RN	-0.00145	-0.06556	-0.83021
	RN	0.02894	0.02755	0.02127

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01357	0.01076	-0.00070
	RN	0.02528	0.02268	-0.00826
	SN	-0.00145	-0.08920	-1.38679
	SN	0.02819	0.02543	-0.00647
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01237	0.01053	0.00485
	RN	0.02407	0.02244	0.01199
	SN	-0.00145	-0.06556	-0.83015
	SN	0.02697	0.02516	0.01379

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00352	-0.00365	-0.00364
	(!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)	0.01740	0.01667	0.02375
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00656	0.00593	0.01309
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00654	0.00592	0.01307
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00661	0.00599	0.01315
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00352	-0.00365	-0.00364
	(!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)	0.01740	0.01668	0.02376
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00656	0.00593	0.01309
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00654	0.00592	0.01307
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00661	0.00599	0.01315

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00365	0.00365	0.00364
	(!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)	0.02541	0.02497	0.03149
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01138	0.01110	0.01788
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01140	0.01111	0.01787
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01132	0.01105	0.01782
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00365	0.00365	0.00364
	(!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)	0.02540	0.02496	0.03148
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01137	0.01109	0.01787
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01139	0.01110	0.01786
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01131	0.01103	0.01781

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00340	0.00292	0.01520
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01459	0.01372	0.02587
sky130_osu_sc_15T_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)	0.00340	0.00292	0.01521
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01460	0.01369	0.02588

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.01136	0.01130	0.02447
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02329	0.02268	0.03556
sky130_osu_sc_15T_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)	0.01134	0.01129	0.02446
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02327	0.02266	0.03555

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	-0.00838	-0.00844	-0.00843
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00864	-0.00888	-0.00887
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00833	-0.00849	-0.00845
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00517	0.00453	0.01279
sky130_osu_sc_15T_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)	-0.00838	-0.00844	-0.00843
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00862	-0.00886	-0.00886
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00832	-0.00848	-0.00845
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00518	0.00457	0.01280

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_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)	0.00841	0.00844	0.00846
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00885	0.00891	0.00887
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00843	0.00850	0.00846
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01809	0.01764	0.02390
sky130_osu_sc_15T_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)	0.00841	0.00844	0.00846
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00883	0.00889	0.00886
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00843	0.00849	0.00846
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01808	0.01763	0.02389

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	-0.00144	0.01081
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00760	0.00616	0.01861
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00753	0.00614	0.01854
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00105	-0.00164	0.01063
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00468	0.00352	0.02738
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	-0.00144	0.01081
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00759	0.00615	0.01860
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00752	0.00612	0.01853
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00105	-0.00164	0.01063
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00468	0.00352	0.02738

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_15T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03865	0.03782	0.05079
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01602	0.01604	0.02895
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02674	0.02633	0.03853
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02684	0.02638	0.03859
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03679	0.03637	0.05924
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01799	0.01781	0.03027
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02154	0.02149	0.04603
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03865	0.03782	0.05079
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01602	0.01604	0.02895
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02674	0.02633	0.03853
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02684	0.02638	0.03859
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03678	0.03636	0.05923
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01799	0.01781	0.03027
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02152	0.02148	0.04602

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dffs_1	48.22950
sky130_osu_sc_15T_ls__dffs_l	48.22950

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_15T_ls__dffs_1	0.00402	0.00703	0.01184	1.55011	1.55732
sky130_osu_sc_15T_ls__dffs_l	0.00402	0.00703	0.01184	1.02240	1.03277

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.01065	0.02481
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.01553	0.02969

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RR)	0.26626	1.33901	14.48810
	QN->Q (FR)	0.03781	0.92475	13.27520
	SN->Q (FR)	0.21397	1.49482	16.89990
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.26362	1.43750	13.65730
	QN->Q (FR)	0.04260	0.98815	12.85750
	SN->Q (FR)	0.21158	1.58797	16.02080

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->Q (RF)	0.35852	1.48598	15.30920
	QN->Q (RF)	0.02578	0.63570	9.14631
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.36362	1.61333	14.64100
	QN->Q (RF)	0.02636	0.62388	8.23978

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RR)	0.32182	0.90143	6.96096
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.32347	0.98402	7.02452

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dffs_1	CK->QN (RF)	0.21770	0.62323	4.28094
	SN->QN (FF)	0.16489	0.78007	6.69047
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.20820	0.62237	3.77520
	SN->QN (FF)	0.15480	0.77240	6.14344

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.05875	-0.08111	-0.17678
	setup	CK (R)	0.19642	0.23504	1.47881
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.05858	-0.07739	-0.17735
	setup	CK (R)	0.19443	0.23606	1.43103

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.13650	-0.40166	-2.82267
	setup	CK (R)	0.17778	0.41398	3.98187
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13847	-0.40152	-2.89295
	setup	CK (R)	0.17745	0.41398	3.97948

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.05875	-0.08111	-0.17678
	setup	CK (R)	0.19642	0.23504	1.47881
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.05858	-0.07739	-0.17735
	setup	CK (R)	0.19443	0.23606	1.43103

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	hold	CK (R)	-0.13650	-0.40166	-2.82267
	setup	CK (R)	0.17778	0.41398	3.98187
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.13847	-0.40152	-2.89295
	setup	CK (R)	0.17745	0.41398	3.97948

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.04767	0.07727	6.42529
	removal	CK (R)	-0.01686	-0.05179	-0.21809
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.04727	0.07696	6.23887
	removal	CK (R)	-0.01686	-0.05179	-0.21809

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	recovery	CK (R)	0.04767	0.07727	6.42529
	removal	CK (R)	-0.01686	-0.05179	-0.21809
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.04727	0.07696	6.23887
	removal	CK (R)	-0.01686	-0.05179	-0.21809

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dffs_1	min_pulse_width	SN ()	0.15169	0.47974	13.33370
	min_pulse_width	SN ()	0.15530	0.47974	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.14809	0.47974	13.33370
	min_pulse_width	SN ()	0.14448	0.47974	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_15T_ls__dffs_1	min_pulse_width	CK ()	0.11204	0.47974	13.33370
	min_pulse_width	CK ()	0.17693	0.47974	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.10843	0.47974	13.33370
	min_pulse_width	CK ()	0.16972	0.47974	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_15T_ls__dffs_1	min_pulse_width	CK ()	0.26705	0.47974	13.33370
	min_pulse_width	CK ()	0.14809	0.47974	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.26705	0.47974	13.33370
	min_pulse_width	CK ()	0.14809	0.47974	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01078	0.00813	0.00000
	SN	-0.00145	-0.08403	-1.25559
	SN	0.02373	0.02114	-0.00363
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00943	0.00753	0.00256
	SN	-0.00145	-0.06546	-0.82815
	SN	0.02238	0.02059	0.01066

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01259	0.01036	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.00989	0.00372

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01259	0.01037	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01125	0.00988	0.00359

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01074	0.00811	0.00000
	SN	-0.00145	-0.08427	-1.26133
	SN	0.02370	0.02112	-0.00385
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00940	0.00750	0.00196
	SN	-0.00145	-0.06586	-0.83649
	SN	0.02234	0.02055	0.01079

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00358	-0.00371	-0.00369
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01287	0.01206	0.01931
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00562	0.00496	0.01225
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00358	-0.00371	-0.00369
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01287	0.01206	0.01931
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00562	0.00496	0.01225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00371	0.00371	0.00369
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02187	0.02138	0.02820
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01085	0.01054	0.01750
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00371	0.00371	0.00369
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02187	0.02138	0.02820
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01085	0.01054	0.01750

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00605	-0.00611	-0.00609
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00459	0.00408	0.01222
sky130_osu_sc_15T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00605	-0.00608	-0.00609
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00459	0.00408	0.01222

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00610	0.00615	0.00611
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01241	0.01195	0.01976
sky130_osu_sc_15T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00610	0.00615	0.00611
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01241	0.01195	0.01976

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00089	-0.00147	0.01080
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00120	-0.00180	0.01049
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00369	0.00259	0.02678
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00089	-0.00147	0.01080
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00120	-0.00179	0.01049
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00369	0.00259	0.02678

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03406	0.03325	0.04642
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01598	0.01601	0.02893
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03319	0.03281	0.05581
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01807	0.01789	0.03037
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02091	0.02094	0.04580
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03406	0.03324	0.04642
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01597	0.01603	0.02893
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03319	0.03280	0.05581
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01807	0.01789	0.03037
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02091	0.02068	0.04578

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__dff_1	40.29300
sky130_osu_sc_15T_ls__dff_l	40.29300

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_15T_ls__dff_1	0.00418	0.01176	1.71637	1.71318
sky130_osu_sc_15T_ls__dff_l	0.00418	0.01174	0.94251	0.94074

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00384	0.00418
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00872	0.00906

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RR)	0.21739	1.31229	15.41520
	QN->Q (FR)	0.03302	0.86700	12.79410
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.22589	1.38593	13.03350
	QN->Q (FR)	0.04761	1.05273	13.35680

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->Q (RF)	0.30993	1.44273	16.05110
	QN->Q (RF)	0.02554	0.65876	9.71850
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.32821	1.57139	14.12540
	QN->Q (RF)	0.02647	0.60865	7.90260

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RR)	0.27544	0.83652	6.98722
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.28836	0.95493	6.86421

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__dff_1	CK->QN (RF)	0.17431	0.59356	4.68312
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.17089	0.56556	3.38737

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.04923	-0.07147	-0.18848
	setup	CK (R)	0.14650	0.19031	1.36332
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.04870	-0.07547	-0.18802
	setup	CK (R)	0.14215	0.18885	1.37494

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	hold	CK (R)	-0.12719	-0.40504	-3.30405
	setup	CK (R)	0.15648	0.41775	4.45673
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.13016	-0.40504	-3.28220
	setup	CK (R)	0.15648	0.41775	4.37589

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_15T_ls__dff_1	min_pulse_width	CK ()	0.09401	0.47974	13.33370
	min_pulse_width	CK ()	0.16251	0.47974	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.09041	0.47974	13.33370
	min_pulse_width	CK ()	0.15890	0.47974	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_15T_ls__dff_1	**min_pulse_width**	**CK ()**	0.21658	0.47974	13.33370
	min_pulse_width	**CK ()**	0.12285	0.47974	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.21658	0.47974	13.33370
	min_pulse_width	**CK ()**	0.12285	0.47974	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01142	0.00844	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01023	0.00839	0.00493

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01281	0.01140	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01154	0.00969	-0.00181

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01281	0.01139	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01154	0.00971	-0.00171

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01138	0.00845	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01019	0.00830	0.00419

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00362	-0.00362
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01197	0.01132	0.01860
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00362	-0.00362
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01198	0.01132	0.01860

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00360	0.00364	0.00362
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02258	0.02213	0.02892
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00360	0.00364	0.00362
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02259	0.02214	0.02892

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00089	-0.00146	0.01082
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00119	-0.00177	0.01053
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00089	-0.00146	0.01082
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00119	-0.00177	0.01053

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01589	0.01594	0.02884
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03318	0.03241	0.04595
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03369	0.03329	0.05660
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01797	0.01780	0.03028
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01589	0.01595	0.02884
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03319	0.03242	0.04596
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03369	0.03332	0.05660
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01797	0.01780	0.03028

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__inv_1	5.49450
sky130_osu_sc_15T_ls__inv_10	27.47250
sky130_osu_sc_15T_ls__inv_2	7.93650
sky130_osu_sc_15T_ls__inv_3	10.37850
sky130_osu_sc_15T_ls__inv_4	12.82050
sky130_osu_sc_15T_ls__inv_6	17.70450
sky130_osu_sc_15T_ls__inv_8	22.58850
sky130_osu_sc_15T_ls__inv_l	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_15T_ls__inv_1	0.00408	1.63885
sky130_osu_sc_15T_ls__inv_10	0.03776	14.93365
sky130_osu_sc_15T_ls__inv_2	0.00774	3.26118
sky130_osu_sc_15T_ls__inv_3	0.01152	4.65611
sky130_osu_sc_15T_ls__inv_4	0.01522	6.31308
sky130_osu_sc_15T_ls__inv_6	0.02280	9.33916
sky130_osu_sc_15T_ls__inv_8	0.03028	12.28684
sky130_osu_sc_15T_ls__inv_l	0.00305	0.93522

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00051	0.00078
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00513	0.00774
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00103	0.00155
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00154	0.00233
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00205	0.00310
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00308	0.00465
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00411	0.00620
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00295	0.00555

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (FR)**	0.03174	0.81039	11.81420
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.04443	0.55701	11.71180
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.02556	0.69761	11.76250
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.02814	0.65311	11.72290
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.02868	0.62172	11.75200
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.03241	0.58834	11.76910
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.03801	0.56890	11.75620
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.04173	0.92122	11.75860

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__inv_1	**A->Y (RF)**	0.02276	0.57424	8.39562
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.03381	0.37009	8.35526
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.01883	0.49811	8.40967
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02064	0.46449	8.44837
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02064	0.43539	8.46891
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02522	0.40655	8.48556
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.02950	0.38592	8.46733
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.02424	0.55457	7.13397

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00574	0.00579	0.00711
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04871	0.05256	0.06473
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01016	0.01056	0.01313
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01560	0.01623	0.02010
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02002	0.02132	0.02611
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02962	0.03098	0.03913
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03917	0.04167	0.05146
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00428	0.00424	0.00521

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00119	-0.00116	-0.00028
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01934	-0.01796	-0.00687
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00370	-0.00351	-0.00160
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00496	-0.00468	-0.00169
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00758	-0.00701	-0.00302
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01157	-0.01061	-0.00440
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01564	-0.01443	-0.00577
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00075	-0.00076	0.00011

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__mux2_1	15.26250

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_15T_ls__mux2_1	0.32519	0.32520	0.00833	0.32617

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00147	0.00229

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (RR)	-	0.01591	0.29664	2.99581
	A1->Y (RR)	-	0.01783	0.29866	2.99724
	S0->Y (RR)	(!A0 * A1)	0.05016	0.29264	1.01536
	S0->Y (FR)	(A0 * !A1)	0.04058	0.43834	3.71663

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__mux2_1	A0->Y (FF)	-	0.01602	0.28271	2.81221
	A1->Y (FF)	-	0.01487	0.28041	2.80451
	S0->Y (FF)	(!A0 * A1)	0.07009	0.41203	2.65754
	S0->Y (RF)	(A0 * !A1)	0.02601	0.31148	2.30486

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00581	-0.00582	-0.00583
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00394	-0.00395	-0.00395
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00696	0.00734	0.02117
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00390	-0.00429	0.00902

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00582	0.00582	0.00583
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00394	0.00395	0.00395
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00106	0.00074	0.01442
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01545	0.01569	0.02888

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00145	-0.00144	-0.00144

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00145	0.00144	0.00144

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00173	-0.00173	-0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00173	0.00173	0.00173

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00146	-0.00174	0.01175
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00140	-0.00164	0.01179

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01178	0.01211	0.02527
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01063	0.01107	0.02474

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nand2_1	7.93650
sky130_osu_sc_15T_ls__nand2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nand2_1	0.00408	0.00406	1.62228
sky130_osu_sc_15T_ls__nand2_l	0.00305	0.00305	0.92771

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00053	0.00155
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00297	0.01109

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (FR)	0.03312	0.81199	11.80960
	B->Y (FR)	0.03915	0.80767	11.62910
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.04323	0.92274	11.73990
	B->Y (FR)	0.05177	0.92856	11.71610

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nand2_1	A->Y (RF)	0.03274	0.72035	10.49510
	B->Y (RF)	0.03729	0.70180	10.11080
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.03511	0.70007	8.84116
	B->Y (RF)	0.03914	0.67715	8.38479

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00612	0.00613	0.00737
	B	0.00000	0.00000	0.00000
	B	0.00773	0.00770	0.00880
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00452	0.00418	0.00542
	B	0.00000	0.00000	0.00000
	B	0.00567	0.00530	0.00653

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00074	-0.00080	0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00069	-0.00080	-0.00024
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00049	-0.00049	0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00047	-0.00055	0.00002

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00414	-0.00415	-0.00417
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00288	-0.00289	-0.00290

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00416	0.00425	0.00418
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00289	0.00295	0.00290

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00385	-0.00388	-0.00385
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00268	-0.00270	-0.00269

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00389	0.00391	0.00387
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00271	0.00272	0.00269

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__nor2_1	7.93650
sky130_osu_sc_15T_ls__nor2_l	7.93650

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__nor2_1	0.00404	0.00434	0.86070
sky130_osu_sc_15T_ls__nor2_l	0.00295	0.00327	0.53856

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00054	0.00078
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00302	0.00555

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (FR)	0.06912	0.95328	11.41540
	B->Y (FR)	0.05338	0.94490	11.61520
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.08369	1.08657	11.41770
	B->Y (FR)	0.06966	1.08700	11.74360

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__nor2_1	A->Y (RF)	0.03071	0.48079	5.88955
	B->Y (RF)	0.02421	0.46899	5.87040
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03041	0.47312	5.19481
	B->Y (RF)	0.02555	0.46343	5.17900

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00827	0.00816	0.00880
	B	0.00000	0.00000	0.00000
	B	0.00626	0.00622	0.00791
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00583	0.00573	0.00635
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00452	0.00582

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00074	0.00049	0.00169
	B	0.00000	0.00000	0.00000
	B	-0.00093	-0.00091	0.00027
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00046	0.00032	0.00151
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00053	0.00062

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00327	-0.00365	-0.00365
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00222	-0.00243	-0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00364	0.00365	0.00365
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00243	0.00243	0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00167	-0.00171	-0.00168
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00114	-0.00117	-0.00114

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00176	0.00176	0.00171
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00120	0.00121	0.00116

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai21_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_15T_ls__oai21_l	0.00408	0.00415	0.00346	0.83273

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00245	0.00632

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (FR)	0.07533	0.96810	11.59680
	A1->Y (FR)	0.09525	0.98595	11.41060
	B0->Y (FR)	0.05064	0.85860	10.60230

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai21_l	A0->Y (RF)	0.04518	0.57135	6.75347
	A1->Y (RF)	0.05351	0.56741	6.61309
	B0->Y (RF)	0.03522	0.60431	7.46961

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00859	0.00813	0.00996
	A1	0.00000	0.00000	0.00000
	A1	0.01061	0.01046	0.01103
	B0	0.00709	0.00699	0.00807

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00021	0.00006	0.00082
	A1	0.00000	0.00000	0.00000
	A1	0.00188	0.00153	0.00228
	B0	0.00266	0.00257	0.00345

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00168	-0.00172	-0.00169
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00358	-0.00368	-0.00368
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00375	-0.00377	-0.00375

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00178	0.00179	0.00171
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00366	0.00368	0.00368
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00375	0.00380	0.00376

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00318	-0.00359	-0.00357
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00354	-0.00366	-0.00365
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00370	-0.00372	-0.00371

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00356	0.00359	0.00357
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00363	0.00366	0.00365
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00371	0.00374	0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00295	-0.00297	-0.00301

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00300	0.00304	0.00302

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__oai22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_1	0.00394	0.00418	0.00430	0.00419	0.85612

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00082	0.00155

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (FR)	0.10370	0.98773	11.42740
	A1->Y (FR)	0.08764	0.97526	11.62600
	B0->Y (FR)	0.05980	0.94839	11.60860
	B1->Y (FR)	0.07716	0.96140	11.41030

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__oai22_l	A0->Y (RF)	0.07616	0.61775	6.94517
	A1->Y (RF)	0.06119	0.59763	6.89030
	B0->Y (RF)	0.05182	0.62892	7.61130
	B1->Y (RF)	0.06746	0.65159	7.70929

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.01383	0.01358	0.01424
	A1	0.01176	0.01130	0.01309
	B0	0.00870	0.00832	0.01009
	B1	0.01084	0.01068	0.01126

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00311	0.00277	0.00345
	A1	0.00161	0.00140	0.00206
	B0	0.00159	0.00146	0.00245
	B1	0.00313	0.00282	0.00384

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00326	-0.00364	-0.00365
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00326	-0.00364	-0.00365
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00356	-0.00365	-0.00366
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00371	-0.00372	-0.00372

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00364	0.00364	0.00365
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00364	0.00364	0.00365
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00365	0.00365	0.00366
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00371	0.00375	0.00373

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00166	-0.00170	-0.00167
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00166	-0.00170	-0.00167
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00352	-0.00361	-0.00362
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00368	-0.00369	-0.00369

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00174	0.00175	0.00169
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00174	0.00175	0.00169
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00360	0.00361	0.00362
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00368	0.00371	0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00164	-0.00169	-0.00165
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00164	-0.00165	-0.00165
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00394	-0.00406	-0.00404
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00402	-0.00405	-0.00410

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00173	0.00174	0.00168
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00173	0.00174	0.00168
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00404	0.00407	0.00404
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00410	0.00412	0.00412

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00320	-0.00358	-0.00358
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00320	-0.00360	-0.00358
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00403	-0.00414	-0.00413
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00410	-0.00412	-0.00418

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00356	0.00358	0.00358
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00356	0.00360	0.00358
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00412	0.00414	0.00413
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00417	0.00422	0.00420

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__or2_1	10.37850
sky130_osu_sc_15T_ls__or2_2	12.82050
sky130_osu_sc_15T_ls__or2_4	17.70450
sky130_osu_sc_15T_ls__or2_8	27.47250
sky130_osu_sc_15T_ls__or2_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__or2_1	0.00440	0.00417	1.65198
sky130_osu_sc_15T_ls__or2_2	0.00440	0.00417	3.26580
sky130_osu_sc_15T_ls__or2_4	0.00440	0.00418	6.30343
sky130_osu_sc_15T_ls__or2_8	0.00440	0.00418	12.09109
sky130_osu_sc_15T_ls__or2_l	0.00335	0.00311	0.94348

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00093	0.00128
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00131	0.00205
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00207	0.00360
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00360	0.00670
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00468	0.00627

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (RR)	0.07460	0.63945	6.74039
	B->Y (RR)	0.06595	0.60807	6.64976
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.08175	0.56765	6.82901
	B->Y (RR)	0.07263	0.54076	6.74166
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.10673	0.56231	7.14049
	B->Y (RR)	0.09746	0.54088	7.06193
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.15407	0.61351	7.58853
	B->Y (RR)	0.14475	0.59749	7.52003
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.08306	0.74020	6.54961
	B->Y (RR)	0.07516	0.71435	6.44257

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__or2_1	A->Y (FF)	0.12788	0.69464	6.65724
	B->Y (FF)	0.10660	0.66709	6.56153
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.15489	0.68398	6.87092
	B->Y (FF)	0.13374	0.66565	6.78607
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.21984	0.74175	7.29918
	B->Y (FF)	0.19871	0.73392	7.22626
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.35061	0.88326	7.79492
	B->Y (FF)	0.32956	0.87263	7.75901
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.14997	0.70457	5.68438
	B->Y (FF)	0.12595	0.68830	5.64109

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00612	0.00532	0.01310
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00441	0.01439
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01053	0.01005	0.01791
	B	0.00000	0.00000	0.00000
	B	0.00893	0.00918	0.01879
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02011	0.02036	0.02855
	B	0.00000	0.00000	0.00000
	B	0.01847	0.01951	0.02942
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03941	0.04072	0.05088
	B	0.00000	0.00000	0.00000
	B	0.03776	0.03994	0.05161
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00443	0.00397	0.01033
	B	0.00000	0.00000	0.00000
	B	0.00344	0.00358	0.01048

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.01356	0.01333	0.01922
	B	0.00000	0.00000	0.00000
	B	0.01120	0.01155	0.02312
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01666	0.01701	0.02264
	B	0.00000	0.00000	0.00000
	B	0.01427	0.01518	0.02598
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02464	0.02555	0.03106
	B	0.00000	0.00000	0.00000
	B	0.02205	0.02341	0.03367
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04153	0.04213	0.04842
	B	0.00000	0.00000	0.00000
	B	0.03922	0.04030	0.05047
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00998	0.00958	0.01447
	B	0.00000	0.00000	0.00000
	B	0.00838	0.00849	0.01626

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00330	-0.00368	-0.00367
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00330	-0.00368	-0.00367
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00330	-0.00369	-0.00367
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00330	-0.00369	-0.00367
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00224	-0.00248	-0.00247

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00368	0.00367
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00368	0.00367
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00369	0.00367
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00365	0.00369	0.00367
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00246	0.00248	0.00247

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00168	-0.00172	-0.00169
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00172	-0.00169
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00172	-0.00169
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00172	-0.00169
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00117	-0.00119	-0.00117

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00178	0.00179	0.00172
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00178	0.00179	0.00172
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00178	0.00179	0.00172
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00178	0.00180	0.00172
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00123	0.00124	0.00119

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tbufi_1	10.37850
sky130_osu_sc_15T_ls__tbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tbufi_1	0.00433	0.00554	0.86801
sky130_osu_sc_15T_ls__tbufi_l	0.00327	0.00424	0.53190

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00064	0.00155
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00313	0.01109

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (FR)	0.05063	0.94011	11.61570
	OE->Y (FR)	0.05326	0.35742	5.09360
	OE->Y (RR)	0.08894	0.74987	6.77731
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.06710	1.07930	11.65980
	OE->Y (FR)	0.06185	0.35741	5.09343
	OE->Y (RR)	0.10164	0.87447	6.63667

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tbufi_1	A->Y (RF)	0.03176	0.57656	7.20966
	OE->Y (FF)	0.05395	0.35743	5.09355
	OE->Y (RF)	0.03073	0.55102	6.76828
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.03465	0.57388	6.36453
	OE->Y (FF)	0.06286	0.35738	5.09341
	OE->Y (RF)	0.03275	0.54367	5.89718

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00587	0.00582	0.00736
	OE	0.00000	0.00000	0.00000
	OE	0.00592	0.00559	0.01884
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00434	0.00424	0.00543
	OE	0.00000	0.00000	0.00000
	OE	0.00413	0.00393	0.01312

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00094	-0.00092	0.00016
	OE	0.00000	0.00000	0.00000
	OE	0.00381	0.00348	0.01725
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00055	-0.00055	0.00050
	OE	0.00000	0.00000	0.00000
	OE	0.00257	0.00237	0.01259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00283	-0.00284	-0.00284
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00250	-0.00252	-0.00250
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00207	-0.00208	-0.00208
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00185	-0.00187	-0.00185

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00283	0.00284	0.00284
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00256	0.00256	0.00253
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00207	0.00208	0.00208
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00189	0.00191	0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00223	0.00192	0.01591
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00200	0.00171	0.01566
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00148	0.00129	0.01162
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00129	0.00112	0.01143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00677	0.00659	0.02057
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00698	0.00684	0.02072
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00518	0.00504	0.01491
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00534	0.00523	0.01502

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__tnbufi_1	10.37850
sky130_osu_sc_15T_ls__tnbufi_l	10.37850

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_15T_ls__tnbufi_1	0.00432	0.00665	0.86634
sky130_osu_sc_15T_ls__tnbufi_l	0.00327	0.00480	0.52935

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00081	0.00103
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00485	0.00591

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (FR)	0.05114	0.93939	11.60190
	OE->Y (RR)	0.02906	0.35774	5.09401
	OE->Y (FR)	0.06440	0.94688	11.40080
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.06757	1.07705	11.62600
	OE->Y (RR)	0.02875	0.35771	5.09400
	OE->Y (FR)	0.07924	1.07646	11.29580

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_15T_ls__tnbufi_1	A->Y (RF)	0.03125	0.57606	7.20149
	OE->Y (RF)	0.02887	0.35772	5.09404
	OE->Y (FF)	0.05938	0.55686	5.22001
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.03402	0.57262	6.34593
	OE->Y (RF)	0.02861	0.35768	5.09397
	OE->Y (FF)	0.06830	0.58068	4.74142

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00603	0.00598	0.00753
	OE	0.00000	0.00000	0.00000
	OE	0.01469	0.01510	0.02971
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00451	0.00441	0.00559
	OE	0.00000	0.00000	0.00000
	OE	0.01057	0.01078	0.02087

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00116	-0.00113	-0.00005
	OE	0.00000	0.00000	0.00000
	OE	0.01284	0.01323	0.02550
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00077	-0.00075	0.00030
	OE	0.00000	0.00000	0.00000
	OE	0.00918	0.00937	0.01832

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00240	-0.00244	-0.00241
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00210	-0.00212	-0.00210
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00166	-0.00167	-0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00146	-0.00147	-0.00146

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00240	0.00244	0.00241
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00215	0.00215	0.00213
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00166	0.00167	0.00166
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00149	0.00150	0.00147

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00435	-0.00501	0.00945
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00420	-0.00486	0.00947
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00284	-0.00318	0.00732
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00272	-0.00317	0.00735

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01103	0.01151	0.02615
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01084	0.01126	0.02598
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00792	0.00816	0.01854
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00779	0.00804	0.01843

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xnor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xnor2_l	0.00858	0.00765	0.88758

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00174	0.00258

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (RR)	B	0.11255	0.79430	6.98018
	A->Y (FR)	!B	0.06836	0.96294	11.73230
	B->Y (RR)	A	0.09011	0.77067	6.97196
	B->Y (FR)	!A	0.08953	0.97487	11.53240

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xnor2_l	A->Y (FF)	B	0.10245	0.64531	5.54966
	A->Y (RF)	!B	0.04413	0.56581	6.86290
	B->Y (FF)	A	0.08983	0.63306	5.54439
	B->Y (RF)	!A	0.05434	0.57932	6.87221

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00602	0.00552	0.01756
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01449	0.01449	0.02967
	B	A	0.00000	0.00000	0.00000
	B	A	0.00217	0.00201	0.01570
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01585	0.01579	0.03032

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01757	0.01716	0.03029
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00394	0.00342	0.01766
	B	A	0.00000	0.00000	0.00000
	B	A	0.01610	0.01652	0.03021
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00486	0.00421	0.01840

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__xor2_l	17.70450

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_15T_ls__xor2_l	0.00859	0.00769	0.86692

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00174	0.00205

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (RR)	!B	0.11207	0.78543	6.92840
	A->Y (FR)	B	0.08337	0.96859	11.49840
	B->Y (RR)	!A	0.09489	0.77700	6.93626
	B->Y (FR)	A	0.09160	0.97743	11.49260

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_15T_ls__xor2_l	A->Y (FF)	!B	0.09289	0.63546	5.44042
	A->Y (RF)	B	0.04492	0.59772	7.22132
	B->Y (FF)	!A	0.08738	0.62974	5.46971
	B->Y (RF)	A	0.05371	0.57693	6.78634

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01704	0.01698	0.03156
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00314	0.00193	0.01487
	B	A	0.00000	0.00000	0.00000
	B	A	0.01748	0.01748	0.03191
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00195	0.00167	0.01534

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_15T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00311	0.00237	0.01689
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01829	0.01858	0.03029
	B	A	0.00000	0.00000	0.00000
	B	A	0.00315	0.00240	0.01648
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01637	0.01688	0.03058

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__ant	5.49450
sky130_osu_sc_15T_ls__tiehi	5.49450
sky130_osu_sc_15T_ls__tielo	5.49450

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_15T_ls__ant	0.41639
sky130_osu_sc_15T_ls__tiehi	0.00000
sky130_osu_sc_15T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__ant	0.00000	213420.00000	426840.00000
sky130_osu_sc_15T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_15T_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_15T_ls__ant	0.00000	0.00000	0.00000
	-0.00248	0.04788	0.68769

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_15T_ls__ant	0.00000	0.00000	0.00000
	3.71505	3.52352	0.85282