sky130_osu_sc_15T_ls_tt_1P44_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_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.01489	0.01487	0.01156	0.94634	0.42081	0.90805
sky130_osu_sc_15T_ls__addf_l	0.01488	0.01487	0.01157	0.57951	0.42163	0.59083

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00069	0.00072
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00096	0.00107

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)	0.24195	2.15288	24.02910
	B->CO (RR)	0.22305	2.08240	23.37040
	CI->CO (RR)	0.23042	2.16110	24.33400
	CON->CO (FR)	0.05071	1.04219	12.85240
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.25111	2.01791	19.13470
	B->CO (RR)	0.23999	1.96183	18.82120
	CI->CO (RR)	0.23945	2.02652	19.48230
	CON->CO (FR)	0.06589	1.17460	12.87180

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)	0.44095	3.24941	35.26040
	B->CO (FF)	0.40372	3.13320	34.22440
	CI->CO (FF)	0.39378	3.18170	35.16770
	CON->CO (RF)	0.03093	0.66255	8.27588
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.42268	2.70116	24.70350
	B->CO (FF)	0.38656	2.60788	24.06810
	CI->CO (FF)	0.37581	2.63298	24.63090
	CON->CO (RF)	0.03300	0.65061	7.44789

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)	0.32651	1.53174	12.85420
	B->CON (FR)	0.29206	1.45939	12.56360
	CI->CON (FR)	0.27949	1.46339	12.81750
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.30963	1.51572	12.87440
	B->CON (FR)	0.27625	1.44414	12.56100
	CI->CON (FR)	0.26256	1.44727	12.81520

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)	0.12446	0.73200	6.82557
	B->CON (RF)	0.11832	0.72558	6.94468
	CI->CON (RF)	0.11287	0.74275	7.18823
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.11948	0.72741	6.82618
	B->CON (RF)	0.11367	0.72138	6.94529
	CI->CON (RF)	0.10790	0.73821	7.18886

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)	0.61843	3.26108	29.75470
	B->S (-R)	0.61220	3.22204	29.34740
	CI->S (-R)	0.56760	3.18621	29.63480
	CON->S (RR)	0.13979	0.99074	8.46072
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.59474	2.96760	24.12190
	B->S (-R)	0.58890	2.94005	23.90820
	CI->S (-R)	0.54385	2.89067	24.01820
	CON->S (RR)	0.14560	1.09458	8.42949

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)	0.42983	1.95066	16.80180
	B->S (-F)	0.45547	1.90996	16.46680
	CI->S (-F)	0.41760	1.95079	17.09540
	CON->S (FF)	0.19268	0.91428	7.14612
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.39742	1.71419	13.28690
	B->S (-F)	0.39860	1.64748	13.13640
	CI->S (-F)	0.38504	1.71820	13.61320
	CON->S (FF)	0.17201	0.90256	6.59022

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	0.00246	0.00234	0.00233
	B	0.00300	0.00301	0.00303
	CI	0.00310	0.00316	0.00321
sky130_osu_sc_15T_ls__addf_l	A	0.00194	0.00177	0.00172
	B	0.00248	0.00242	0.00238
	CI	0.00258	0.00258	0.00258

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00841	0.00839	0.00855
	B	0.00826	0.00834	0.00848
	CI	0.00726	0.00747	0.00762
sky130_osu_sc_15T_ls__addf_l	A	0.00791	0.00788	0.00790
	B	0.00775	0.00781	0.00785
	CI	0.00675	0.00694	0.00696

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00840	0.00839	0.00838
	B	0.00825	0.00832	0.00830
	CI	0.00725	0.00743	0.00744
sky130_osu_sc_15T_ls__addf_l	A	0.00790	0.00786	0.00786
	B	0.00775	0.00779	0.00778
	CI	0.00675	0.00692	0.00691

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00243	0.00234	0.00223
	B	0.00298	0.00297	0.00286
	CI	0.00310	0.00315	0.00310
sky130_osu_sc_15T_ls__addf_l	A	0.00191	0.00177	0.00164
	B	0.00246	0.00240	0.00227
	CI	0.00257	0.00258	0.00252

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00841	0.00839	0.00854
	B	0.00826	0.00834	0.00847
	CI	0.00726	0.00747	0.00762
sky130_osu_sc_15T_ls__addf_l	A	0.00791	0.00788	0.00794
	B	0.00776	0.00781	0.00785
	CI	0.00676	0.00694	0.00700

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01733	0.01746	0.01738
	B	0.01562	0.01532	0.01547
	CI	0.01412	0.01415	0.01408
sky130_osu_sc_15T_ls__addf_l	A	0.01659	0.01659	0.01650
	B	0.01492	0.01451	0.01467
	CI	0.01340	0.01335	0.01327

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00734	0.00806	0.93989	0.45203	0.94127
sky130_osu_sc_15T_ls__addh_l	0.00734	0.00806	0.60597	0.45348	0.60216

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00054	0.00058
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00085	0.00091

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)	0.17133	1.02289	8.50233
	B->CO (RR)	0.17599	1.02369	8.67354
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.17918	1.13177	8.49397
	B->CO (RR)	0.18388	1.13482	8.67074

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)	0.16178	0.87499	7.24054
	B->CO (FF)	0.17106	0.88947	7.32149
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.15222	0.82627	6.25366
	B->CO (FF)	0.16120	0.84112	6.34173

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	0.24005	0.86414	4.81066
	A->CON (FR)	!B	0.18917	1.36058	12.84170
	B->CON (RR)	A	0.24465	0.86392	4.97516
	B->CON (FR)	!A	0.22544	1.41707	12.91910
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.22100	0.83954	4.73922
	A->CON (FR)	!B	0.17281	1.34530	12.81830
	B->CON (RR)	A	0.22579	0.84135	4.90120
	B->CON (FR)	!A	0.20919	1.40164	12.92060

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	0.22753	0.95045	6.62433
	A->CON (RF)	!B	0.07603	0.70401	7.28824
	B->CON (FF)	A	0.22992	0.97465	6.84981
	B->CON (RF)	!A	0.08991	0.70941	7.13607
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.21180	0.92909	6.52560
	A->CON (RF)	!B	0.07126	0.70200	7.29312
	B->CON (FF)	A	0.21399	0.95409	6.75522
	B->CON (RF)	!A	0.08522	0.70521	7.14081

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	0.17745	2.06233	23.85720
	A->S (FR)	B	0.33011	2.28417	22.90630
	B->S (RR)	!A	0.19102	2.02797	23.19850
	B->S (FR)	A	0.33380	2.34856	23.64920
	CON->S (FR)	-	0.05360	1.05644	12.98260
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.18143	1.94134	19.51830
	A->S (FR)	B	0.32327	2.15181	18.53920
	B->S (RR)	!A	0.19520	1.91713	19.09170
	B->S (FR)	A	0.32646	2.20389	19.06230
	CON->S (FR)	-	0.06548	1.17981	13.03080

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	0.28291	2.91117	33.36040
	A->S (RF)	B	0.30902	1.84572	17.27280
	B->S (FF)	!A	0.31897	2.97571	33.48970
	B->S (RF)	A	0.31372	1.84564	17.42170
	CON->S (RF)	-	0.02932	0.64977	8.14640
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.26440	2.44535	24.27170
	A->S (RF)	B	0.28902	1.59140	12.27360
	B->S (FF)	!A	0.30092	2.50452	24.38490
	B->S (RF)	A	0.29380	1.59300	12.44540
	CON->S (RF)	-	0.03133	0.64940	7.50794

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	0.00382	0.00364	0.00348
	B	0.00000	0.00000	0.00000
	B	0.00352	0.00334	0.00311
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00332	0.00310	0.00306
	B	0.00000	0.00000	0.00000
	B	0.00302	0.00280	0.00267

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	0.00579	0.00558	0.00532
	B	0.00000	0.00000	0.00000
	B	0.00602	0.00601	0.00576
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00530	0.00507	0.00488
	B	0.00000	0.00000	0.00000
	B	0.00553	0.00549	0.00532

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	0.00382	0.00363	0.00370
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00507	0.00505	0.00502
	B	A	0.00000	0.00000	0.00000
	B	A	0.00351	0.00334	0.00324
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00560	0.00556	0.00527
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00332	0.00309	0.00313
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00472	0.00469	0.00418
	B	A	0.00000	0.00000	0.00000
	B	A	0.00301	0.00280	0.00273
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00525	0.00519	0.00485

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	0.00579	0.00560	0.00547
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00089	0.00088	0.00075
	B	A	0.00000	0.00000	0.00000
	B	A	0.00601	0.00601	0.00595
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00145	0.00138	0.00125
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00530	0.00508	0.00498
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00045	0.00042	0.00031
	B	A	0.00000	0.00000	0.00000
	B	A	0.00553	0.00548	0.00546
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00100	0.00092	0.00081

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	0.00580	0.00560	0.00551
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00090	0.00091	0.00087
	B	A	0.00000	0.00000	0.00000
	B	A	0.00602	0.00602	0.00598
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00146	0.00142	0.00134
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00531	0.00508	0.00504
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00045	0.00043	0.00039
	B	A	0.00000	0.00000	0.00000
	B	A	0.00553	0.00549	0.00549
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00101	0.00093	0.00090

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	0.00382	0.00363	0.00352
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00506	0.00508	0.00507
	B	A	0.00000	0.00000	0.00000
	B	A	0.00351	0.00334	0.00315
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00560	0.00559	0.00558
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00332	0.00309	0.00302
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00472	0.00470	0.00469
	B	A	0.00000	0.00000	0.00000
	B	A	0.00301	0.00280	0.00272
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00525	0.00520	0.00517

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00393	0.00403	0.94407
sky130_osu_sc_15T_ls__and2_2	0.00393	0.00403	1.84968
sky130_osu_sc_15T_ls__and2_4	0.00393	0.00402	3.63807
sky130_osu_sc_15T_ls__and2_6	0.00396	0.00402	5.28551
sky130_osu_sc_15T_ls__and2_8	0.00393	0.00403	6.92496
sky130_osu_sc_15T_ls__and2_l	0.00301	0.00312	0.58413

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00022	0.00031
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00032	0.00046
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00051	0.00075
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00071	0.00105
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00090	0.00134
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00053	0.00079

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)	0.13100	0.94004	8.09598
	B->Y (RR)	0.13783	0.95178	8.29835
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.14930	0.85932	8.31079
	B->Y (RR)	0.15611	0.86247	8.48867
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.20604	0.87316	8.95058
	B->Y (RR)	0.21280	0.86675	9.07377
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.26203	0.91317	9.20588
	B->Y (RR)	0.26859	0.90271	9.30411
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.31670	0.96555	9.54344
	B->Y (RR)	0.32337	0.95471	9.61664
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.14763	1.06240	7.94042
	B->Y (RR)	0.15467	1.07310	8.13630

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)	0.12114	0.79581	6.70729
	B->Y (FF)	0.12968	0.81538	6.84085
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.14644	0.78511	7.01930
	B->Y (FF)	0.15512	0.80132	7.12572
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.21127	0.83575	7.58911
	B->Y (FF)	0.21920	0.84732	7.66122
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.27807	0.90017	7.90493
	B->Y (FF)	0.28536	0.90899	7.96698
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.34100	0.96337	8.16782
	B->Y (FF)	0.34812	0.97409	8.22476
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.13899	0.82827	6.28899
	B->Y (FF)	0.15066	0.85097	6.43817

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	0.00301	0.00264	0.00286
	B	0.00000	0.00000	0.00000
	B	0.00305	0.00268	0.00267
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00564	0.00551	0.00569
	B	0.00000	0.00000	0.00000
	B	0.00570	0.00559	0.00560
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01145	0.01175	0.01226
	B	0.00000	0.00000	0.00000
	B	0.01153	0.01191	0.01220
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01723	0.01799	0.01885
	B	0.00000	0.00000	0.00000
	B	0.01729	0.01811	0.01883
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02300	0.02300	0.02506
	B	0.00000	0.00000	0.00000
	B	0.02306	0.02409	0.02501
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00215	0.00188	0.00212
	B	0.00000	0.00000	0.00000
	B	0.00222	0.00192	0.00195

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	0.00710	0.00694	0.00720
	B	0.00000	0.00000	0.00000
	B	0.00800	0.00782	0.00804
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00898	0.00920	0.00947
	B	0.00000	0.00000	0.00000
	B	0.00987	0.01009	0.01028
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01354	0.01455	0.01497
	B	0.00000	0.00000	0.00000
	B	0.01443	0.01536	0.01571
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01816	0.01997	0.02063
	B	0.00000	0.00000	0.00000
	B	0.01907	0.02070	0.02125
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02263	0.02510	0.02612
	B	0.00000	0.00000	0.00000
	B	0.02350	0.02581	0.02663
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00542	0.00525	0.00547
	B	0.00000	0.00000	0.00000
	B	0.00606	0.00589	0.00607

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)	-0.00250	-0.00252	-0.00253
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00250	-0.00252	-0.00253
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00250	-0.00252	-0.00253
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00252	-0.00254	-0.00254
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00250	-0.00251	-0.00253
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00179	-0.00181	-0.00181

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)	0.00253	0.00254	0.00254
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00253	0.00254	0.00253
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00253	0.00254	0.00253
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00255	0.00256	0.00255
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00253	0.00254	0.00253
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00181	0.00182	0.00181

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)	-0.00237	-0.00237	-0.00238
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00237	-0.00239	-0.00238
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00237	-0.00239	-0.00238
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00237	-0.00237	-0.00238
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00237	-0.00239	-0.00238
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00171	-0.00172	-0.00171

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)	0.00238	0.00239	0.00238
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00239	0.00238
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00241	0.00238
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00241	0.00238
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00238	0.00241	0.00238
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00172	0.00172	0.00171

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00367	0.00385	0.00375	0.42207

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00018	0.00036

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)	0.17157	1.39848	12.89770
	A1->Y (FR)	0.14510	1.33006	12.57270
	B0->Y (FR)	0.13061	1.33441	12.82900

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)	0.06583	0.65912	6.63436
	A1->Y (RF)	0.05962	0.66590	6.89016
	B0->Y (RF)	0.03868	0.60438	6.48006

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	0.00595	0.00588	0.00539
	A1	0.00000	0.00000	0.00000
	A1	0.00502	0.00492	0.00488
	B0	0.00479	0.00466	0.00377

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	0.00114	0.00096	0.00087
	A1	0.00000	0.00000	0.00000
	A1	0.00116	0.00095	0.00087
	B0	-0.00045	-0.00047	-0.00054

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)	-0.00206	-0.00213	-0.00214
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00219	-0.00220	-0.00219
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00219	-0.00221	-0.00219

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)	0.00213	0.00213	0.00214
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00219	0.00222	0.00220
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00220	0.00222	0.00220

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)	-0.00203	-0.00211	-0.00210
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00215	-0.00216	-0.00215
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00233	-0.00236	-0.00236

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)	0.00210	0.00212	0.00210
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00215	0.00217	0.00216
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00236	0.00238	0.00237

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)	-0.00110	-0.00111	-0.00111

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)	0.00124	0.00124	0.00114

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00366	0.00382	0.00399	0.00379	0.42289

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00020	0.00030

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)	0.21302	1.43394	12.85680
	A1->Y (FR)	0.19017	1.39826	12.75580
	B0->Y (FR)	0.13589	1.31595	12.66430
	B1->Y (FR)	0.15868	1.35124	12.79410

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)	0.08452	0.68032	6.66585
	A1->Y (RF)	0.07825	0.68741	6.92257
	B0->Y (RF)	0.04845	0.65151	6.87698
	B1->Y (RF)	0.05442	0.64385	6.62243

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	0.00732	0.00725	0.00720
	A1	0.00641	0.00628	0.00623
	B0	0.00516	0.00498	0.00494
	B1	0.00603	0.00590	0.00586

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00238	0.00221	0.00208
	A1	0.00239	0.00221	0.00208
	B0	-0.00020	-0.00023	-0.00030
	B1	-0.00018	-0.00021	-0.00028

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)	-0.00207	-0.00216	-0.00214
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00219	-0.00220	-0.00219
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00219	-0.00219	-0.00219
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00219	-0.00220	-0.00219

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)	0.00213	0.00216	0.00214
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00219	0.00222	0.00220
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00220	0.00222	0.00220
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00220	0.00222	0.00220

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)	-0.00203	-0.00212	-0.00210
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00215	-0.00216	-0.00215
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00233	-0.00236	-0.00236
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00233	-0.00236	-0.00236

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)	0.00210	0.00212	0.00210
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00215	0.00219	0.00216
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00235	0.00237	0.00237
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00235	0.00237	0.00237

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)	-0.00110	-0.00112	-0.00111
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00110	-0.00112	-0.00111
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00242	-0.00244	-0.00245
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00242	-0.00244	-0.00245

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)	0.00130	0.00130	0.00116
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00110	0.00112	0.00111
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00245	0.00247	0.00246
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00245	0.00247	0.00246

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)	-0.00112	-0.00113	-0.00112
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00111	-0.00112	-0.00112
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00224	-0.00225	-0.00224
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00224	-0.00225	-0.00224

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)	0.00131	0.00131	0.00117
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00111	0.00112	0.00112
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00225	0.00225	0.00224
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00225	0.00225	0.00224

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00403	0.92480
sky130_osu_sc_15T_ls__buf_2	0.00406	1.83900
sky130_osu_sc_15T_ls__buf_4	0.00406	3.62481
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00406	7.01622
sky130_osu_sc_15T_ls__buf_l	0.00314	0.59094

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00023	0.00023
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00034	0.00038
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00057	0.00067
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00103	0.00126
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00050	0.00050

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)**	0.09619	0.89252	7.94694
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.10673	0.80095	8.20972
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.14384	0.79281	8.76443
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.21682	0.84690	9.33413
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.11182	1.01662	7.91945

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)**	0.11486	0.78179	6.56833
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.14208	0.78812	7.12956
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.20737	0.84064	7.76751
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.33803	0.97197	8.44917
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.13385	0.82150	6.26199

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	0.00281	0.00236	0.00259
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00545	0.00514	0.00531
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01133	0.01145	0.01162
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02286	0.02370	0.02481
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00210	0.00173	0.00197

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	0.00693	0.00671	0.00699
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00882	0.00896	0.00921
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01342	0.01430	0.01465
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02261	0.02485	0.02568
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00533	0.00511	0.00533

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
	-0.00045	-0.00045	-0.00045

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
	0.00045	0.00045	0.00045

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00377	0.00379	0.01128	0.88721	0.88384
sky130_osu_sc_15T_ls__dffr_l	0.00377	0.00379	0.01125	0.58216	0.58291

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00142	0.00161
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00169	0.00188

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)	0.64686	2.05273	15.21950
	QN->Q (FR)	0.06090	1.15399	14.04640
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.62189	2.13241	14.30740
	QN->Q (FR)	0.07105	1.23940	13.67660

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)	0.55366	2.08825	17.16850
	QN->Q (RF)	0.03458	0.71437	8.82231
	RN->Q (FF)	0.39236	2.09395	19.33240
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.56879	2.25891	16.45260
	QN->Q (RF)	0.03526	0.69817	8.03602
	RN->Q (FF)	0.40827	2.26357	18.59930

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)	0.49026	1.32618	8.62943
	RN->QN (FR)	0.32850	1.33060	10.78780
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.49785	1.43883	8.68064
	RN->QN (FR)	0.33612	1.44449	10.82590

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)**	0.54804	1.11620	4.83072
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.51214	1.07631	4.35001

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)	-0.10662	-0.13776	-0.72451
	setup	CK (R)	0.50371	0.50975	1.86890
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.10721	-0.13814	-0.72454
	setup	CK (R)	0.50548	0.51401	1.88626

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)	-0.24176	-0.61710	-6.58144
	setup	CK (R)	0.28493	0.63471	6.63508
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.24207	-0.61685	-6.58541
	setup	CK (R)	0.28466	0.63464	6.63494

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)	-0.10662	-0.13776	-0.72451
	setup	CK (R)	0.50371	0.50975	1.86890
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.10721	-0.13814	-0.72454
	setup	CK (R)	0.50548	0.51401	1.88626

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)	-0.24176	-0.61710	-6.58144
	setup	CK (R)	0.28493	0.63471	6.63508
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.24207	-0.61685	-6.58541
	setup	CK (R)	0.28466	0.63464	6.63494

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)	0.44355	0.45461	1.65995
	removal	CK (R)	-0.09170	-0.10666	-0.16302
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.44559	0.45546	1.66606
	removal	CK (R)	-0.09170	-0.10666	-0.15902

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)	0.44355	0.45461	1.65995
	removal	CK (R)	-0.09170	-0.10666	-0.16302
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.44559	0.45546	1.66606
	removal	CK (R)	-0.09170	-0.10666	-0.15902

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 ()	0.23800	0.58827	13.33370
	min_pulse_width	RN ()	0.23579	0.58827	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.23413	0.58390	13.33370
	min_pulse_width	RN ()	0.23193	0.58390	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 ()	0.29646	0.52490	13.33370
	min_pulse_width	CK ()	0.29646	0.52490	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.26889	0.52490	13.33370
	min_pulse_width	CK ()	0.28858	0.52490	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 ()	0.63518	0.71064	13.33370
	min_pulse_width	CK ()	0.23033	0.54675	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.63713	0.71282	13.33370
	min_pulse_width	CK ()	0.23033	0.54675	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	0.00685	0.00577	-0.00148
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00603	0.00513	0.00102

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	0.00788	0.00712	0.00148
	RN	-0.00096	-0.03892	-0.45993
	RN	0.01776	0.01708	0.01119
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00704	0.00648	0.00396
	RN	-0.00096	-0.03023	-0.30179
	RN	0.01691	0.01643	0.01362

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	0.00789	0.00712	0.00151
	RN	-0.00096	-0.03883	-0.45818
	RN	0.01777	0.01709	0.01126
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00704	0.00649	0.00394
	RN	-0.00096	-0.03025	-0.30218
	RN	0.01691	0.01644	0.01361

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	0.00683	0.00575	-0.00151
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00600	0.00510	0.00083

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	-0.00197	-0.00213	-0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00814	0.00773	0.00757
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00350	0.00315	0.00304
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00197	-0.00213	-0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00814	0.00773	0.00757
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00350	0.00315	0.00304

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	0.00211	0.00213	0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01321	0.01299	0.01276
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00630	0.00612	0.00608
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00211	0.00213	0.00212
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01321	0.01299	0.01276
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00630	0.00612	0.00608

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)	0.00265	0.00221	0.00230
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00757	0.00692	0.00687
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)	0.00265	0.00221	0.00230
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00757	0.00692	0.00687

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)	0.00644	0.00615	0.00638
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01333	0.01286	0.01281
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)	0.00644	0.00615	0.00638
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01332	0.01286	0.01281

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)	-0.00035	-0.00088	-0.00083
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00407	0.00318	0.00293
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00061	-0.00117	-0.00110
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00035	-0.00088	-0.00083
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00407	0.00318	0.00293
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00061	-0.00117	-0.00110

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)	0.01011	0.00976	0.00986
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02107	0.02038	0.01986
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01594	0.01560	0.01535
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02073	0.02002	0.02025
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01115	0.01082	0.01096
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01011	0.00976	0.00986
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02106	0.02038	0.01986
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01594	0.01560	0.01535
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02074	0.02002	0.02026
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01117	0.01082	0.01096

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00373	0.00380	0.00833	0.01157	0.94930	0.94807
sky130_osu_sc_15T_ls__dffsr_l	0.00373	0.00380	0.00832	0.01157	0.58757	0.58634

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00118	0.00151
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00145	0.00178

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)	0.60826	2.02553	15.78360
	QN->Q (FR)	0.05441	1.09847	13.53930
	RN->Q (RR)	0.49077	1.92289	15.85970
	SN->Q (FR)	0.46742	2.03994	18.61610
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.60393	2.12559	14.50940
	QN->Q (FR)	0.07112	1.24201	13.73240
	RN->Q (RR)	0.48698	2.02428	14.58850
	SN->Q (FR)	0.46325	2.14191	17.30230

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)	0.63342	2.17063	17.60340
	QN->Q (RF)	0.03427	0.72894	9.10997
	RN->Q (FF)	0.41262	2.11292	19.79390
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.65702	2.36256	16.68920
	QN->Q (RF)	0.03518	0.69923	8.06019
	RN->Q (FF)	0.43740	2.30628	18.87400

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)	0.57027	1.40039	8.74368
	RN->QN (FR)	0.35072	1.34365	10.93950
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.58453	1.53595	8.82585
	RN->QN (FR)	0.36551	1.48050	11.00770

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)	0.52022	1.09971	5.15652
	RN->QN (RF)	0.40290	0.99893	5.23089
	SN->QN (FF)	0.37967	1.11596	7.99229
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.50037	1.06698	4.45715
	RN->QN (RF)	0.38350	0.96745	4.53426
	SN->QN (FF)	0.36025	1.08484	7.24573

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)	-0.11225	-0.14798	-0.82502
	setup	CK (R)	0.45810	0.46004	1.84064
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.11285	-0.14578	-0.82659
	setup	CK (R)	0.45815	0.46054	1.84456

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)	-0.28424	-0.64880	-6.84427
	setup	CK (R)	0.34103	0.66617	6.88580
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.28188	-0.64728	-6.84482
	setup	CK (R)	0.34249	0.66666	6.88362

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)	-0.11225	-0.14798	-0.82502
	setup	CK (R)	0.45810	0.46004	1.84064
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.11285	-0.14578	-0.82659
	setup	CK (R)	0.45815	0.46054	1.84456

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)	-0.28424	-0.64880	-6.84427
	setup	CK (R)	0.34103	0.66617	6.88580
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.28188	-0.64728	-6.84482
	setup	CK (R)	0.34249	0.66666	6.88362

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)	0.36140	0.36640	1.53631
	removal	CK (R)	-0.04297	-0.05016	-0.10774
	hold	SN (R)	-0.37638	-0.63845	-4.67588
	setup	SN (R)	0.40212	0.68747	6.61459
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.36396	0.36696	1.54230
	removal	CK (R)	-0.04167	-0.05236	-0.10636
	hold	SN (R)	-0.36000	-0.61662	-4.56198
	setup	SN (R)	0.40257	0.66792	6.49014

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)	0.36140	0.36640	1.53631
	removal	CK (R)	-0.04297	-0.05016	-0.10774
	hold	SN (R)	-0.37638	-0.63845	-4.67588
	hold	SN (R)	-0.37866	-0.63845	-4.68385
	setup	SN (R)	0.40212	0.68328	6.53009
	setup	SN (R)	0.39854	0.68747	6.61459
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.36396	0.36696	1.54230
	removal	CK (R)	-0.04167	-0.05236	-0.10636
	hold	SN (R)	-0.36258	-0.61662	-4.56198
	hold	SN (R)	-0.36000	-0.62136	-4.57761
	setup	SN (R)	0.40257	0.66029	6.38594
	setup	SN (R)	0.37653	0.66792	6.49014

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 ()	0.26800	0.61231	13.33370
	min_pulse_width	RN ()	0.27725	0.61231	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.26847	0.60794	13.33370
	min_pulse_width	RN ()	0.26847	0.60794	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)	0.06322	0.09761	2.16601
	removal	CK (R)	-0.01843	-0.06365	-0.61575
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.06145	0.09811	2.02856
	removal	CK (R)	-0.01834	-0.06498	-0.61706

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)	0.06322	0.09761	2.16601
	removal	CK (R)	-0.01843	-0.06365	-0.61575
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.06145	0.09811	2.02856
	removal	CK (R)	-0.01834	-0.06498	-0.61706

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 ()	0.37490	0.71282	13.33370
	min_pulse_width	SN ()	0.37713	0.71719	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.37271	0.69316	13.33370
	min_pulse_width	SN ()	0.35650	0.69753	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 ()	0.26889	0.52490	13.33370
	min_pulse_width	CK ()	0.33191	0.52490	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.25707	0.52490	13.33370
	min_pulse_width	CK ()	0.32403	0.52490	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 ()	0.58986	0.66256	13.33370
	min_pulse_width	CK ()	0.29343	0.58827	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.58986	0.66256	13.33370
	min_pulse_width	CK ()	0.29121	0.58827	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	0.00847	0.00733	-0.00159
	RN	0.01571	0.01477	0.00548
	SN	-0.00096	-0.04053	-0.49212
	SN	0.01718	0.01632	0.00708
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00773	0.00685	0.00276
	RN	0.01496	0.01426	0.00975
	SN	-0.00096	-0.03039	-0.30460
	SN	0.01643	0.01583	0.01139

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	0.00903	0.00855	0.00512
	RN	-0.00096	-0.04053	-0.49212
	RN	0.01850	0.01800	0.01438
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00825	0.00776	0.00525
	RN	-0.00096	-0.03039	-0.30460
	RN	0.01770	0.01720	0.01442

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	0.00903	0.00855	0.00511
	RN	-0.00096	-0.04050	-0.49148
	RN	0.01850	0.01800	0.01439
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00826	0.00777	0.00527
	RN	-0.00096	-0.03036	-0.30396
	RN	0.01771	0.01720	0.01449

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	0.00844	0.00731	-0.00162
	RN	0.01569	0.01474	0.00521
	SN	-0.00096	-0.04050	-0.49144
	SN	0.01715	0.01630	0.00699
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00769	0.00681	0.00259
	RN	0.01493	0.01424	0.00972
	SN	-0.00096	-0.03036	-0.30394
	SN	0.01640	0.01581	0.01126

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	-0.00205	-0.00213	-0.00212
	(!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)	0.01045	0.01008	0.00992
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00396	0.00363	0.00351
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00395	0.00362	0.00349
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00400	0.00367	0.00355
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00205	-0.00213	-0.00212
	(!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)	0.01045	0.01008	0.00992
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00396	0.00363	0.00351
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00395	0.00362	0.00349
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00400	0.00367	0.00355

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	0.00212	0.00213	0.00212
	(!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)	0.01512	0.01490	0.01459
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00678	0.00662	0.00658
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00679	0.00664	0.00659
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00674	0.00659	0.00654
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00212	0.00213	0.00212
	(!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)	0.01511	0.01490	0.01458
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00677	0.00662	0.00657
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00678	0.00663	0.00658
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00673	0.00658	0.00653

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)	0.00246	0.00202	0.00203
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00922	0.00857	0.00840
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)	0.00246	0.00202	0.00203
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00922	0.00857	0.00841

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)	0.00706	0.00675	0.00701
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01423	0.01368	0.01360
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)	0.00705	0.00674	0.00700
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01422	0.01367	0.01359

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)	-0.00496	-0.00500	-0.00501
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00521	-0.00527	-0.00528
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00497	-0.00502	-0.00502
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00306	0.00264	0.00250
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)	-0.00496	-0.00500	-0.00501
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00519	-0.00525	-0.00527
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00497	-0.00502	-0.00502
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00306	0.00265	0.00251

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)	0.00501	0.00504	0.00502
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00527	0.00532	0.00528
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00499	0.00507	0.00502
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01082	0.01056	0.01055
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)	0.00501	0.00504	0.00502
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00526	0.00530	0.00527
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00499	0.00507	0.00502
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01081	0.01055	0.01055

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)	-0.00035	-0.00087	-0.00083
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00468	0.00385	0.00358
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00463	0.00380	0.00352
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00045	-0.00102	-0.00096
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00315	0.00211	0.00230
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00035	-0.00087	-0.00083
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00467	0.00384	0.00357
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00462	0.00379	0.00351
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00045	-0.00102	-0.00096
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00315	0.00211	0.00230

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)	0.02350	0.02285	0.02234
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01014	0.00983	0.00990
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01625	0.01593	0.01571
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01631	0.01601	0.01576
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02260	0.02185	0.02192
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01105	0.01071	0.01086
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01347	0.01285	0.01320
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02350	0.02285	0.02234
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01014	0.00983	0.00990
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01625	0.01593	0.01571
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01631	0.01601	0.01576
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02259	0.02184	0.02192
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01106	0.01071	0.01086
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01347	0.01284	0.01319

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00376	0.00673	0.01136	0.88780	0.88674
sky130_osu_sc_15T_ls__dffs_l	0.00376	0.00673	0.01136	0.58731	0.58567

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00126	0.00195
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00153	0.00222

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)	0.44547	1.82265	14.99690
	QN->Q (FR)	0.06090	1.15763	14.00140
	SN->Q (FR)	0.36449	1.93279	17.88180
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.43945	1.93385	14.22790
	QN->Q (FR)	0.07106	1.25046	13.71160
	SN->Q (FR)	0.35681	2.04250	17.03870

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)	0.61440	2.15171	17.20220
	QN->Q (RF)	0.03439	0.71267	8.79997
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.62512	2.32151	16.61770
	QN->Q (RF)	0.03511	0.69759	8.04797

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)	0.54840	1.39056	8.69452
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.55243	1.49891	8.75739

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)	0.36003	0.89599	4.64244
	SN->QN (FF)	0.27764	1.00758	7.53121
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.34231	0.87886	4.18575
	SN->QN (FF)	0.25854	0.98900	7.00326

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)	-0.08279	-0.12094	-0.69961
	setup	CK (R)	0.32247	0.33517	1.82142
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08330	-0.12151	-0.70135
	setup	CK (R)	0.32283	0.33617	1.83305

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)	-0.25183	-0.62364	-6.63552
	setup	CK (R)	0.31984	0.64357	6.69107
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.24930	-0.62107	-6.63681
	setup	CK (R)	0.31990	0.64348	6.69080

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)	-0.08279	-0.12094	-0.69961
	setup	CK (R)	0.32247	0.33517	1.82142
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08330	-0.12151	-0.70135
	setup	CK (R)	0.32283	0.33617	1.83305

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)	-0.25183	-0.62364	-6.63552
	setup	CK (R)	0.31984	0.64357	6.69107
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.24930	-0.62107	-6.63681
	setup	CK (R)	0.31990	0.64348	6.69080

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)	0.06813	0.09758	1.57665
	removal	CK (R)	-0.02051	-0.05491	-0.36777
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.07032	0.09702	1.43496
	removal	CK (R)	-0.01999	-0.05491	-0.36777

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)	0.06813	0.09758	1.57665
	removal	CK (R)	-0.02051	-0.05491	-0.36777
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.07032	0.09702	1.43496
	removal	CK (R)	-0.01999	-0.05491	-0.36777

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 ()	0.26344	0.68878	13.33370
	min_pulse_width	SN ()	0.26784	0.68660	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.25219	0.66475	13.33370
	min_pulse_width	SN ()	0.25045	0.66693	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 ()	0.17436	0.52490	13.33370
	min_pulse_width	CK ()	0.31615	0.52490	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.16648	0.52490	13.33370
	min_pulse_width	CK ()	0.30434	0.52490	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 ()	0.45138	0.58608	13.33370
	min_pulse_width	CK ()	0.27034	0.55768	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.45026	0.59046	13.33370
	min_pulse_width	CK ()	0.27034	0.55768	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	0.00686	0.00571	-0.00164
	SN	-0.00096	-0.03893	-0.46024
	SN	0.01473	0.01378	0.00556
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00602	0.00507	0.00102
	SN	-0.00096	-0.03039	-0.30446
	SN	0.01389	0.01315	0.00882

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	0.00786	0.00714	0.00164
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00702	0.00649	0.00401

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	0.00786	0.00714	0.00165
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00702	0.00649	0.00402

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	0.00684	0.00570	-0.00165
	SN	-0.00096	-0.03891	-0.45965
	SN	0.01471	0.01376	0.00546
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00600	0.00505	0.00094
	SN	-0.00096	-0.03033	-0.30359
	SN	0.01386	0.01312	0.00860

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	-0.00208	-0.00217	-0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00794	0.00754	0.00728
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00343	0.00308	0.00297
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00208	-0.00217	-0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00794	0.00754	0.00728
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00343	0.00308	0.00297

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	0.00216	0.00217	0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01311	0.01286	0.01268
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00646	0.00628	0.00623
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00216	0.00217	0.00216
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01311	0.01286	0.01268
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00646	0.00628	0.00623

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)	-0.00363	-0.00366	-0.00366
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00276	0.00240	0.00246
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)	-0.00363	-0.00366	-0.00366
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00276	0.00240	0.00246

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)	0.00367	0.00371	0.00367
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00762	0.00726	0.00736
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)	0.00367	0.00371	0.00367
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00762	0.00726	0.00734

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)	-0.00037	-0.00090	-0.00085
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00057	-0.00112	-0.00107
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00260	0.00156	0.00176
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00037	-0.00090	-0.00085
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00057	-0.00112	-0.00107
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00260	0.00156	0.00176

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)	0.02092	0.02026	0.01974
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01012	0.00977	0.00988
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02056	0.01976	0.01998
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01111	0.01078	0.01092
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01310	0.01247	0.01283
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02092	0.02026	0.01974
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01012	0.00977	0.00988
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02056	0.01976	0.01998
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01111	0.01078	0.01092
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01310	0.01247	0.01283

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00392	0.01121	0.95970	0.95707
sky130_osu_sc_15T_ls__dff_l	0.00392	0.01121	0.55120	0.55111

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00094	0.00105
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00121	0.00132

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)	0.36052	1.74987	15.60140
	QN->Q (FR)	0.05405	1.09813	13.59160
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.37255	1.85351	13.79430
	QN->Q (FR)	0.07801	1.31145	14.12630

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)	0.53623	2.07116	17.62830
	QN->Q (RF)	0.03413	0.72931	9.13683
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.56978	2.27206	16.25300
	QN->Q (RF)	0.03520	0.68563	7.83877

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)	0.47534	1.29861	8.67692
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.49698	1.45628	8.69314

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)	0.28453	0.82482	4.87041
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.27704	0.79629	3.97542

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)	-0.07701	-0.11776	-0.73264
	setup	CK (R)	0.23407	0.25511	1.79193
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.07932	-0.11817	-0.73089
	setup	CK (R)	0.23321	0.25331	1.79280

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)	-0.24217	-0.62544	-6.71878
	setup	CK (R)	0.28711	0.64977	6.78677
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.24321	-0.62584	-6.72149
	setup	CK (R)	0.28645	0.64967	6.78675

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 ()	0.14679	0.52490	13.33370
	min_pulse_width	CK ()	0.29252	0.52490	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.13891	0.52490	13.33370
	min_pulse_width	CK ()	0.28464	0.52490	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 ()**	0.36467	0.56423	13.33370
	min_pulse_width	**CK ()**	0.23093	0.56423	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.36255	0.56423	13.33370
	min_pulse_width	**CK ()**	0.23093	0.56423	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	0.00726	0.00596	-0.00291
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00653	0.00553	0.00179

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	0.00798	0.00749	0.00409
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00721	0.00656	0.00290

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	0.00799	0.00749	0.00409
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00722	0.00656	0.00288

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	0.00724	0.00595	-0.00310
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00650	0.00550	0.00161

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	-0.00196	-0.00212	-0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00746	0.00710	0.00690
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00196	-0.00212	-0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00747	0.00710	0.00690

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	0.00210	0.00212	0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01362	0.01332	0.01311
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00210	0.00212	0.00211
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01362	0.01333	0.01311

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)	-0.00036	-0.00085	-0.00084
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00056	-0.00110	-0.00105
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00037	-0.00085	-0.00084
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00056	-0.00110	-0.00105

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)	0.01006	0.00974	0.00981
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02042	0.01979	0.01929
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02090	0.02007	0.02028
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01106	0.01071	0.01085
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01006	0.00974	0.00981
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02043	0.01979	0.01930
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02090	0.02007	0.02029
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01104	0.01071	0.01085

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00384	0.91839
sky130_osu_sc_15T_ls__inv_10	0.03538	8.53790
sky130_osu_sc_15T_ls__inv_2	0.00726	1.84132
sky130_osu_sc_15T_ls__inv_3	0.01081	2.67954
sky130_osu_sc_15T_ls__inv_4	0.01427	3.60167
sky130_osu_sc_15T_ls__inv_6	0.02137	5.37769
sky130_osu_sc_15T_ls__inv_8	0.02838	6.96725
sky130_osu_sc_15T_ls__inv_l	0.00290	0.55044

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00011	0.00015
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00114	0.00147
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00023	0.00029
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00034	0.00044
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00046	0.00059
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00068	0.00088
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00091	0.00118
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00025	0.00029

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)**	0.05244	1.04493	12.77060
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.06383	0.71395	12.68530
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.04042	0.89627	12.76250
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.04330	0.84236	12.80710
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.04304	0.79949	12.78130
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.04756	0.75392	12.87310
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.05499	0.72572	12.69400
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.07011	1.19286	12.90920

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)**	0.03057	0.65622	8.17768
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.04199	0.46852	8.19345
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02501	0.58334	8.20881
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02699	0.55674	8.29287
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02666	0.52939	8.27994
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03154	0.50167	8.31831
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03660	0.48128	8.25004
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.03238	0.63953	7.27190

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	0.00356	0.00351	0.00141
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03014	0.03049	0.00684
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00629	0.00596	0.00212
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00965	0.00961	0.00559
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01238	0.01239	0.00436
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01836	0.01826	0.01883
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02429	0.02326	0.00141
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00268	0.00261	0.00259

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	-0.00057	-0.00062	-0.00062
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01081	-0.01049	-0.00684
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00194	-0.00198	-0.00190
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00254	-0.00263	-0.00244
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00402	-0.00402	-0.00373
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00615	-0.00612	-0.00553
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00840	-0.00837	-0.00141
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00037	-0.00042	-0.00044

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.02323	0.02307	0.00786	0.01719

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00031	0.00031

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)	-	0.02759	0.36624	2.72139
	A1->Y (RR)	-	0.03194	0.36716	2.73287
	S0->Y (RR)	(!A0 * A1)	0.07783	0.34516	1.00672
	S0->Y (FR)	(A0 * !A1)	0.06273	0.48211	3.62824

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)	-	0.02616	0.28005	1.95963
	A1->Y (FF)	-	0.02339	0.27554	1.95554
	S0->Y (FF)	(!A0 * A1)	0.11855	0.52407	3.19996
	S0->Y (RF)	(A0 * !A1)	0.03428	0.26681	1.27828

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	-	-0.00368	-0.00368	-0.00369
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00254	-0.00254	-0.00255
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00442	0.00410	0.00441
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00228	-0.00280	-0.00261

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	-	0.00368	0.00369	0.00369
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00254	0.00254	0.00255
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00086	0.00034	0.00056
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00951	0.00918	0.00942

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)	-0.00096	-0.00096	-0.00096

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)	0.00096	0.00096	0.00096

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)	-0.00114	-0.00114	-0.00114

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)	0.00114	0.00114	0.00114

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)	-0.00074	-0.00123	-0.00104
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00071	-0.00122	-0.00104

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)	0.00723	0.00692	0.00715
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00669	0.00638	0.00668

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00384	0.00381	0.92331
sky130_osu_sc_15T_ls__nand2_l	0.00290	0.00290	0.54618

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00013	0.00016
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00026	0.00057

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)	0.05529	1.05173	12.89190
	B->Y (FR)	0.06485	1.05181	12.75010
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.07279	1.19817	12.88560
	B->Y (FR)	0.08572	1.20915	12.87180

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)	0.04725	0.83985	10.22540
	B->Y (RF)	0.05355	0.83426	10.01450
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.05019	0.81439	8.89098
	B->Y (RF)	0.05583	0.80950	8.62426

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	0.00379	0.00373	0.00371
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00462	0.00460
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00275	0.00272
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00340	0.00337

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	-0.00028	-0.00035	-0.00037
	B	0.00000	0.00000	0.00000
	B	-0.00026	-0.00032	-0.00034
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00022	-0.00027	-0.00028
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00025	-0.00027

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)	-0.00245	-0.00246	-0.00247
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00171	-0.00173	-0.00173

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)	0.00246	0.00249	0.00248
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00174	0.00174	0.00174

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)	-0.00227	-0.00228	-0.00227
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00160	-0.00161	-0.00160

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)	0.00228	0.00228	0.00228
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00161	0.00161	0.00160

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00380	0.00411	0.44411
sky130_osu_sc_15T_ls__nor2_l	0.00279	0.00312	0.27956

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00013	0.00029
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00027	0.00042

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)	0.12708	1.31765	12.77720
	B->Y (FR)	0.10303	1.27319	12.68420
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.15558	1.49075	12.69180
	B->Y (FR)	0.13495	1.45228	12.74620

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)	0.03863	0.55975	5.99589
	B->Y (RF)	0.03227	0.54873	5.97655
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03862	0.54866	5.39975
	B->Y (RF)	0.03393	0.53961	5.38263

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	0.00489	0.00481	0.00479
	B	0.00000	0.00000	0.00000
	B	0.00390	0.00377	0.00376
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00348	0.00342	0.00340
	B	0.00000	0.00000	0.00000
	B	0.00288	0.00267	0.00276

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	0.00049	0.00031	0.00025
	B	0.00000	0.00000	0.00000
	B	-0.00046	-0.00050	-0.00056
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00031	0.00019	0.00015
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00031	-0.00037

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)	-0.00198	-0.00214	-0.00213
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00134	-0.00144	-0.00144

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)	0.00212	0.00214	0.00213
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00143	0.00144	0.00144

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)	-0.00111	-0.00112	-0.00111
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00076	-0.00076	-0.00076

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)	0.00118	0.00118	0.00114
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00080	0.00080	0.00077

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00384	0.00390	0.00330	0.43745

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00023	0.00037

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)	0.14335	1.32290	12.76200
	A1->Y (FR)	0.17391	1.37599	12.84380
	B0->Y (FR)	0.08624	1.08314	11.16130

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)	0.06373	0.68338	6.92112
	A1->Y (RF)	0.07300	0.67960	6.83549
	B0->Y (RF)	0.05089	0.69431	7.35039

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	0.00521	0.00508	0.00505
	A1	0.00000	0.00000	0.00000
	A1	0.00625	0.00614	0.00557
	B0	0.00422	0.00408	0.00410

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	0.00027	0.00021	0.00014
	A1	0.00000	0.00000	0.00000
	A1	0.00123	0.00106	0.00099
	B0	0.00170	0.00162	0.00156

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)	-0.00111	-0.00114	-0.00112
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00207	-0.00216	-0.00215
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00220	-0.00221	-0.00221

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)	0.00119	0.00119	0.00114
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00214	0.00216	0.00215
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00220	0.00222	0.00221

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)	-0.00192	-0.00207	-0.00208
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00205	-0.00212	-0.00213
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00217	-0.00218	-0.00218

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)	0.00207	0.00207	0.00208
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00212	0.00212	0.00213
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00217	0.00220	0.00218

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)	-0.00176	-0.00177	-0.00180

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)	0.00180	0.00182	0.00181

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00368	0.00393	0.00406	0.00394	0.44730

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00020	0.00031

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)	0.19084	1.39029	12.90340
	A1->Y (FR)	0.16516	1.34186	12.81430
	B0->Y (FR)	0.11381	1.28917	12.76520
	B1->Y (FR)	0.14167	1.33704	12.86060

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)	0.09880	0.73374	7.06792
	A1->Y (RF)	0.08198	0.71107	7.02039
	B0->Y (RF)	0.06912	0.72023	7.45298
	B1->Y (RF)	0.08681	0.74515	7.52962

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	0.00804	0.00794	0.00739
	A1	0.00697	0.00683	0.00679
	B0	0.00517	0.00504	0.00501
	B1	0.00628	0.00617	0.00613

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00189	0.00173	0.00163
	A1	0.00099	0.00094	0.00083
	B0	0.00100	0.00092	0.00083
	B1	0.00191	0.00172	0.00165

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)	-0.00197	-0.00214	-0.00213
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00197	-0.00214	-0.00213
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00205	-0.00213	-0.00213
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00218	-0.00219	-0.00218

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)	0.00212	0.00214	0.00213
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00212	0.00214	0.00213
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00212	0.00214	0.00213
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00218	0.00220	0.00219

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)	-0.00110	-0.00111	-0.00111
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00110	-0.00111	-0.00111
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00203	-0.00210	-0.00211
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00216	-0.00217	-0.00217

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)	0.00117	0.00118	0.00113
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00117	0.00118	0.00113
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00210	0.00210	0.00211
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00216	0.00218	0.00217

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)	-0.00109	-0.00110	-0.00110
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00110	-0.00110	-0.00110
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00230	-0.00238	-0.00237
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00235	-0.00237	-0.00243

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)	0.00116	0.00117	0.00112
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00116	0.00117	0.00112
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00237	0.00238	0.00237
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00243	0.00245	0.00244

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)	-0.00193	-0.00210	-0.00209
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00193	-0.00210	-0.00209
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00236	-0.00244	-0.00244
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00241	-0.00243	-0.00248

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)	0.00208	0.00211	0.00209
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00208	0.00210	0.00209
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00243	0.00247	0.00244
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00248	0.00250	0.00249

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00415	0.00393	0.92608
sky130_osu_sc_15T_ls__or2_2	0.00415	0.00393	1.85321
sky130_osu_sc_15T_ls__or2_4	0.00414	0.00393	3.60674
sky130_osu_sc_15T_ls__or2_8	0.00414	0.00394	6.90834
sky130_osu_sc_15T_ls__or2_l	0.00320	0.00296	0.55024

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00026	0.00038
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00039	0.00046
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00065	0.00067
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00118	0.00126
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00050	0.00071

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)	0.11074	0.93156	8.18233
	B->Y (RR)	0.10142	0.90407	7.99292
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.11957	0.83515	8.43926
	B->Y (RR)	0.10953	0.81083	8.28917
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.15706	0.81669	8.88171
	B->Y (RR)	0.14674	0.79852	8.77145
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.22975	0.86418	9.40245
	B->Y (RR)	0.21932	0.85031	9.29912
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.12566	1.06425	8.04575
	B->Y (RR)	0.11716	1.03823	7.87834

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)	0.23728	0.94302	7.38980
	B->Y (FF)	0.20288	0.89287	6.93014
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.29586	0.96664	7.78876
	B->Y (FF)	0.26167	0.91736	7.39419
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.43023	1.09534	8.39697
	B->Y (FF)	0.39593	1.04466	8.10393
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.69630	1.38550	9.11909
	B->Y (FF)	0.66199	1.32712	8.92076
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.27753	0.96755	6.62664
	B->Y (FF)	0.23877	0.92340	6.29786

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	0.00386	0.00338	0.00342
	B	0.00000	0.00000	0.00000
	B	0.00296	0.00258	0.00280
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00654	0.00626	0.00627
	B	0.00000	0.00000	0.00000
	B	0.00560	0.00548	0.00566
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01241	0.01256	0.01286
	B	0.00000	0.00000	0.00000
	B	0.01145	0.01187	0.01211
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02399	0.02490	0.02584
	B	0.00000	0.00000	0.00000
	B	0.02300	0.02424	0.02566
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00280	0.00247	0.00255
	B	0.00000	0.00000	0.00000
	B	0.00220	0.00192	0.00214

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	0.00826	0.00817	0.00814
	B	0.00000	0.00000	0.00000
	B	0.00702	0.00694	0.00721
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01010	0.01045	0.01042
	B	0.00000	0.00000	0.00000
	B	0.00886	0.00916	0.00946
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01461	0.01573	0.01590
	B	0.00000	0.00000	0.00000
	B	0.01336	0.01443	0.01486
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02367	0.02580	0.02692
	B	0.00000	0.00000	0.00000
	B	0.02250	0.02447	0.02576
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00616	0.00596	0.00596
	B	0.00000	0.00000	0.00000
	B	0.00528	0.00518	0.00540

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)	-0.00200	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00200	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00200	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00200	-0.00216	-0.00214
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00136	-0.00146	-0.00146

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)	0.00214	0.00217	0.00214
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00214	0.00217	0.00214
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00214	0.00217	0.00214
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00214	0.00217	0.00214
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00145	0.00146	0.00146

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)	-0.00111	-0.00114	-0.00112
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00111	-0.00114	-0.00112
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00111	-0.00114	-0.00112
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00112	-0.00114	-0.00112
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00078	-0.00079	-0.00077

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)	0.00119	0.00120	0.00114
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00119	0.00120	0.00114
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00119	0.00120	0.00114
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00119	0.00120	0.00114
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00082	0.00082	0.00079

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00409	0.00525	0.44670
sky130_osu_sc_15T_ls__tbufi_l	0.00312	0.00405	0.27938

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00019	0.00023
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00035	0.00057

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)	0.09721	1.26547	12.68000
	OE->Y (FR)	0.08040	0.45168	4.28338
	OE->Y (RR)	0.15125	1.14411	8.11547
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.12943	1.45163	12.74390
	OE->Y (FR)	0.09478	0.47437	4.28318
	OE->Y (RR)	0.17558	1.31126	7.97236

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)	0.04546	0.66566	7.13275
	OE->Y (FF)	0.08154	0.45416	4.28339
	OE->Y (RF)	0.04470	0.65253	6.87336
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.04927	0.65969	6.43487
	OE->Y (FF)	0.09648	0.47698	4.28317
	OE->Y (RF)	0.04731	0.64244	6.16372

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	0.00362	0.00351	0.00348
	OE	0.00000	0.00000	0.00000
	OE	0.00356	0.00309	0.00334
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00269	0.00258	0.00255
	OE	0.00000	0.00000	0.00000
	OE	0.00251	0.00215	0.00241

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	-0.00046	-0.00051	-0.00056
	OE	0.00000	0.00000	0.00000
	OE	0.00249	0.00201	0.00225
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00027	-0.00031	-0.00036
	OE	0.00000	0.00000	0.00000
	OE	0.00168	0.00133	0.00156

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)	-0.00179	-0.00180	-0.00180
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00163	-0.00164	-0.00164
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00131	-0.00132	-0.00131
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00121	-0.00121	-0.00121

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)	0.00179	0.00180	0.00180
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00169	0.00169	0.00167
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00131	0.00132	0.00131
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00124	0.00124	0.00122

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)	0.00142	0.00096	0.00117
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00126	0.00081	0.00102
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00094	0.00060	0.00082
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00083	0.00048	0.00071

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)	0.00416	0.00378	0.00405
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00433	0.00393	0.00415
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00323	0.00293	0.00316
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00336	0.00305	0.00324

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00408	0.00622	0.44675
sky130_osu_sc_15T_ls__tnbufi_l	0.00312	0.00453	0.27935

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00016	0.00030
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00037	0.00050

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)	0.09832	1.26550	12.68070
	OE->Y (RR)	0.03644	0.32296	4.28383
	OE->Y (FR)	0.11588	1.30552	12.76500
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.13040	1.45131	12.74270
	OE->Y (RR)	0.03631	0.32292	4.28376
	OE->Y (FR)	0.14356	1.48072	12.69050

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)	0.04462	0.66531	7.13280
	OE->Y (RF)	0.03627	0.32294	4.28385
	OE->Y (FF)	0.09756	0.75488	5.62550
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.04820	0.65920	6.43386
	OE->Y (RF)	0.03583	0.32291	4.28380
	OE->Y (FF)	0.11263	0.77706	5.23794

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	0.00373	0.00361	0.00359
	OE	0.00000	0.00000	0.00000
	OE	0.00885	0.00862	0.00901
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00281	0.00269	0.00266
	OE	0.00000	0.00000	0.00000
	OE	0.00642	0.00624	0.00656

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	-0.00060	-0.00064	-0.00069
	OE	0.00000	0.00000	0.00000
	OE	0.00791	0.00768	0.00805
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00041	-0.00044	-0.00049
	OE	0.00000	0.00000	0.00000
	OE	0.00569	0.00550	0.00581

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)	-0.00152	-0.00153	-0.00153
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00138	-0.00139	-0.00138
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00105	-0.00106	-0.00106
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00095	-0.00096	-0.00096

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)	0.00152	0.00153	0.00153
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00142	0.00143	0.00141
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00105	0.00106	0.00106
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00099	0.00098	0.00097

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)	-0.00245	-0.00311	-0.00287
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00235	-0.00302	-0.00283
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00161	-0.00207	-0.00183
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00153	-0.00201	-0.00180

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)	0.00670	0.00647	0.00687
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00659	0.00638	0.00673
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00487	0.00469	0.00497
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00478	0.00458	0.00490

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00810	0.00715	0.45454

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00046	0.00060

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	0.19419	1.20919	8.40973
	A->Y (FR)	!B	0.13156	1.31019	12.78610
	B->Y (RR)	A	0.15810	1.17059	8.31665
	B->Y (FR)	!A	0.16174	1.35529	12.89350

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	0.15910	0.85568	6.11106
	A->Y (RF)	!B	0.06349	0.67068	6.93746
	B->Y (FF)	A	0.14522	0.83905	6.10526
	B->Y (RF)	!A	0.07339	0.68441	6.95370

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	0.00360	0.00305	0.00322
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00898	0.00852	0.00806
	B	A	0.00000	0.00000	0.00000
	B	A	0.00166	0.00123	0.00140
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00956	0.00921	0.00933

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	0.01081	0.01028	0.01041
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00261	0.00206	0.00221
	B	A	0.00000	0.00000	0.00000
	B	A	0.00987	0.00969	0.00998
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00322	0.00261	0.00275

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00811	0.00720	0.44520

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00046	0.00053

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	0.19613	1.19839	8.29138
	A->Y (FR)	B	0.15086	1.33846	12.81770
	B->Y (RR)	!A	0.16460	1.17458	8.27381
	B->Y (FR)	A	0.16524	1.35706	12.83200

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	0.15313	0.84744	6.08717
	A->Y (RF)	B	0.06131	0.68942	7.14933
	B->Y (FF)	!A	0.14344	0.83558	6.04673
	B->Y (RF)	A	0.07137	0.68198	6.89418

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	0.01035	0.00994	0.01023
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00215	0.00132	0.00139
	B	A	0.00000	0.00000	0.00000
	B	A	0.01054	0.01021	0.01050
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00150	0.00104	0.00124

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	0.00217	0.00149	0.00157
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01126	0.01099	0.01124
	B	A	0.00000	0.00000	0.00000
	B	A	0.00218	0.00154	0.00167
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01007	0.00990	0.01020

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P44_25C.ccs
Cell Library: Process , Voltage 1.44,
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	0.17213
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	75964.50000	151929.00000
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
	-0.00200	0.01239	0.18160

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
	1.32308	1.24534	0.24252