sky130_osu_sc_15T_ls_tt_1P35_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_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.01460	0.01458	0.01142	0.73841	0.32118	0.71777
sky130_osu_sc_15T_ls__addf_l	0.01459	0.01458	0.01140	0.45900	0.32360	0.46619

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00056	0.00058
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00069	0.00071

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)	0.28673	2.30894	23.40800
	B->CO (RR)	0.26725	2.23790	22.83210
	CI->CO (RR)	0.27334	2.30989	23.63650
	CON->CO (FR)	0.06232	1.13816	13.07690
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.29787	2.18590	19.02100
	B->CO (RR)	0.28460	2.12531	18.71600
	CI->CO (RR)	0.28453	2.18738	19.29020
	CON->CO (FR)	0.08166	1.28761	13.15260

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)	0.57003	3.72088	36.31160
	B->CO (FF)	0.52501	3.59673	35.37050
	CI->CO (FF)	0.51153	3.62883	36.11320
	CON->CO (RF)	0.03444	0.68524	8.11321
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.54597	3.10025	25.68370
	B->CO (FF)	0.50151	2.99845	25.09210
	CI->CO (FF)	0.48708	3.00787	25.49980
	CON->CO (RF)	0.03668	0.67469	7.37707

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)	0.41565	1.74395	13.27640
	B->CON (FR)	0.37469	1.66490	12.99180
	CI->CON (FR)	0.35673	1.65172	13.10650
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.39469	1.72679	13.31120
	B->CON (FR)	0.35474	1.64862	13.02270
	CI->CON (FR)	0.33590	1.63458	13.14050

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)	0.14080	0.77469	6.83315
	B->CON (RF)	0.13339	0.76356	6.91163
	CI->CON (RF)	0.12733	0.77800	7.11071
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.13519	0.77052	6.84828
	B->CON (RF)	0.12811	0.75972	6.92664
	CI->CON (RF)	0.12172	0.77386	7.12640

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)	0.78972	3.83271	31.82120
	B->S (-R)	0.77584	3.77860	31.44450
	CI->S (-R)	0.72661	3.73151	31.59030
	CON->S (RR)	0.16676	1.12126	9.04226
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.76015	3.46461	25.63660
	B->S (-R)	0.74627	3.42692	25.41280
	CI->S (-R)	0.69669	3.36545	25.41320
	CON->S (RR)	0.17470	1.23804	8.98837

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)	0.52722	2.13057	16.66840
	B->S (-F)	0.56388	2.09297	16.36660
	CI->S (-F)	0.51316	2.12702	16.90000
	CON->S (FF)	0.23561	1.00908	7.50467
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.48638	1.87319	13.23470
	B->S (-F)	0.52450	1.84510	13.06930
	CI->S (-F)	0.47235	1.86932	13.49760
	CON->S (FF)	0.21671	0.98486	6.95820

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	0.00216	0.00208	0.00202
	B	0.00260	0.00260	0.00259
	CI	0.00269	0.00273	0.00272
sky130_osu_sc_15T_ls__addf_l	A	0.00171	0.00158	0.00149
	B	0.00215	0.00211	0.00205
	CI	0.00223	0.00224	0.00220

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00725	0.00725	0.00725
	B	0.00712	0.00719	0.00720
	CI	0.00627	0.00643	0.00644
sky130_osu_sc_15T_ls__addf_l	A	0.00682	0.00679	0.00677
	B	0.00668	0.00673	0.00668
	CI	0.00583	0.00597	0.00594

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00725	0.00721	0.00717
	B	0.00711	0.00715	0.00710
	CI	0.00627	0.00640	0.00637
sky130_osu_sc_15T_ls__addf_l	A	0.00682	0.00677	0.00673
	B	0.00668	0.00670	0.00665
	CI	0.00583	0.00595	0.00584

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00214	0.00206	0.00197
	B	0.00257	0.00257	0.00244
	CI	0.00268	0.00273	0.00267
sky130_osu_sc_15T_ls__addf_l	A	0.00168	0.00157	0.00145
	B	0.00212	0.00208	0.00194
	CI	0.00223	0.00224	0.00216

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00725	0.00725	0.00727
	B	0.00712	0.00719	0.00720
	CI	0.00627	0.00643	0.00645
sky130_osu_sc_15T_ls__addf_l	A	0.00682	0.00680	0.00679
	B	0.00669	0.00673	0.00671
	CI	0.00584	0.00597	0.00594

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01487	0.01501	0.01494
	B	0.01347	0.01324	0.01315
	CI	0.01212	0.01217	0.01211
sky130_osu_sc_15T_ls__addf_l	A	0.01423	0.01425	0.01417
	B	0.01284	0.01252	0.01244
	CI	0.01149	0.01148	0.01139

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00719	0.00790	0.73883	0.34349	0.73863
sky130_osu_sc_15T_ls__addh_l	0.00720	0.00791	0.47068	0.34384	0.47516

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00043	0.00046
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00056	0.00058

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)	0.20534	1.15847	9.09854
	B->CO (RR)	0.21052	1.15966	9.27724
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.21544	1.27305	8.96854
	B->CO (RR)	0.22060	1.27650	9.16821

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)	0.20095	0.94681	7.54388
	B->CO (FF)	0.21187	0.96113	7.62626
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.18852	0.89553	6.62357
	B->CO (FF)	0.19919	0.90958	6.71161

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	0.28857	0.98293	5.30207
	A->CON (FR)	!B	0.24497	1.53112	13.13850
	B->CON (RR)	A	0.29367	0.98332	5.47994
	B->CON (FR)	!A	0.28993	1.60629	13.32760
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.26585	0.95527	5.19534
	A->CON (FR)	!B	0.22453	1.51045	13.12300
	B->CON (RR)	A	0.27104	0.95740	5.39553
	B->CON (FR)	!A	0.26944	1.58547	13.31450

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	0.27736	1.03363	7.00573
	A->CON (RF)	!B	0.08677	0.74014	7.18431
	B->CON (FF)	A	0.28169	1.05539	7.20251
	B->CON (RF)	!A	0.10189	0.74388	7.06462
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.25813	1.01090	6.89976
	A->CON (RF)	!B	0.08133	0.73465	7.18065
	B->CON (FF)	A	0.26217	1.03334	7.10218
	B->CON (RF)	!A	0.09654	0.73861	7.06117

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	0.21260	2.21021	23.29860
	A->S (FR)	B	0.40472	2.48143	22.82990
	B->S (RR)	!A	0.22734	2.17679	22.73250
	B->S (FR)	A	0.41050	2.54287	23.49450
	CON->S (FR)	-	0.06533	1.15398	13.22790
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.21777	2.09446	19.29620
	A->S (FR)	B	0.39635	2.35370	18.79630
	B->S (RR)	!A	0.23306	2.07199	18.93420
	B->S (FR)	A	0.40164	2.40287	19.25780
	CON->S (FR)	-	0.08067	1.29085	13.29060

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	0.37140	3.33978	34.59840
	A->S (RF)	B	0.37670	2.07341	17.73920
	B->S (FF)	!A	0.41649	3.41685	34.82240
	B->S (RF)	A	0.38190	2.07397	17.92050
	CON->S (RF)	-	0.03270	0.67433	8.01845
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.34624	2.79096	25.15180
	A->S (RF)	B	0.35189	1.78541	12.75240
	B->S (FF)	!A	0.39112	2.86834	25.35670
	B->S (RF)	A	0.35715	1.78715	12.93780
	CON->S (RF)	-	0.03485	0.67235	7.42292

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	0.00332	0.00318	0.00304
	B	0.00000	0.00000	0.00000
	B	0.00307	0.00294	0.00279
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00289	0.00271	0.00265
	B	0.00000	0.00000	0.00000
	B	0.00264	0.00248	0.00235

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	0.00503	0.00488	0.00459
	B	0.00000	0.00000	0.00000
	B	0.00522	0.00522	0.00495
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00460	0.00443	0.00420
	B	0.00000	0.00000	0.00000
	B	0.00480	0.00476	0.00456

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	0.00332	0.00317	0.00321
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00439	0.00437	0.00434
	B	A	0.00000	0.00000	0.00000
	B	A	0.00307	0.00294	0.00290
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00483	0.00480	0.00475
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00289	0.00271	0.00260
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00409	0.00405	0.00401
	B	A	0.00000	0.00000	0.00000
	B	A	0.00264	0.00248	0.00243
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00453	0.00448	0.00443

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	0.00503	0.00489	0.00475
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00080	0.00080	0.00071
	B	A	0.00000	0.00000	0.00000
	B	A	0.00522	0.00522	0.00516
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00123	0.00115
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00461	0.00444	0.00428
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00042	0.00041	0.00032
	B	A	0.00000	0.00000	0.00000
	B	A	0.00480	0.00476	0.00468
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00090	0.00084	0.00075

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	0.00504	0.00488	0.00478
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00081	0.00083	0.00079
	B	A	0.00000	0.00000	0.00000
	B	A	0.00523	0.00522	0.00516
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00125	0.00121
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00461	0.00444	0.00435
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00042	0.00042	0.00037
	B	A	0.00000	0.00000	0.00000
	B	A	0.00480	0.00477	0.00473
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00091	0.00085	0.00081

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	0.00332	0.00317	0.00302
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00439	0.00441	0.00438
	B	A	0.00000	0.00000	0.00000
	B	A	0.00307	0.00294	0.00276
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00483	0.00483	0.00481
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00289	0.00271	0.00260
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00409	0.00407	0.00405
	B	A	0.00000	0.00000	0.00000
	B	A	0.00264	0.00247	0.00237
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00452	0.00449	0.00447

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00385	0.00395	0.74059
sky130_osu_sc_15T_ls__and2_2	0.00385	0.00395	1.47838
sky130_osu_sc_15T_ls__and2_4	0.00385	0.00395	2.83949
sky130_osu_sc_15T_ls__and2_6	0.00389	0.00394	4.19779
sky130_osu_sc_15T_ls__and2_8	0.00386	0.00395	5.48678
sky130_osu_sc_15T_ls__and2_l	0.00296	0.00307	0.45957

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00017	0.00024
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00025	0.00036
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00039	0.00062
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00054	0.00087
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00068	0.00112
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00031	0.00044

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)	0.15725	1.06945	8.64714
	B->Y (RR)	0.16490	1.08198	8.87742
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.17838	0.98160	9.02121
	B->Y (RR)	0.18605	0.98551	9.21104
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.24626	0.98618	9.47469
	B->Y (RR)	0.25405	0.98093	9.61994
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.31405	1.03232	9.87098
	B->Y (RR)	0.32154	1.02517	9.98227
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.37989	1.09079	10.20420
	B->Y (RR)	0.38753	1.08423	10.27660
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.17709	1.20010	8.45708
	B->Y (RR)	0.18498	1.21345	8.68244

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)	0.14902	0.86556	7.00198
	B->Y (FF)	0.16001	0.88435	7.13902
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.18260	0.86184	7.40339
	B->Y (FF)	0.19362	0.87717	7.50259
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.26510	0.92395	7.91087
	B->Y (FF)	0.27560	0.93690	7.98199
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.35021	1.00948	8.30712
	B->Y (FF)	0.35964	1.02061	8.36311
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.43079	1.09196	8.58076
	B->Y (FF)	0.43974	1.10546	8.62978
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.17082	0.89682	6.61832
	B->Y (FF)	0.18593	0.91870	6.76865

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	0.00265	0.00234	0.00233
	B	0.00000	0.00000	0.00000
	B	0.00269	0.00241	0.00234
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00492	0.00483	0.00487
	B	0.00000	0.00000	0.00000
	B	0.00498	0.00491	0.00490
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.00996	0.01026	0.01046
	B	0.00000	0.00000	0.00000
	B	0.01002	0.01036	0.01042
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01497	0.01564	0.01581
	B	0.00000	0.00000	0.00000
	B	0.01503	0.01576	0.01590
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01995	0.02061	0.02126
	B	0.00000	0.00000	0.00000
	B	0.02000	0.02094	0.02153
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00190	0.00168	0.00170
	B	0.00000	0.00000	0.00000
	B	0.00196	0.00173	0.00166

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	0.00618	0.00604	0.00604
	B	0.00000	0.00000	0.00000
	B	0.00695	0.00680	0.00680
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00782	0.00799	0.00803
	B	0.00000	0.00000	0.00000
	B	0.00859	0.00876	0.00876
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01180	0.01267	0.01280
	B	0.00000	0.00000	0.00000
	B	0.01258	0.01339	0.01348
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01587	0.01738	0.01769
	B	0.00000	0.00000	0.00000
	B	0.01663	0.01804	0.01829
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.01975	0.02181	0.02243
	B	0.00000	0.00000	0.00000
	B	0.02051	0.02246	0.02297
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00472	0.00458	0.00460
	B	0.00000	0.00000	0.00000
	B	0.00528	0.00513	0.00513

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)	-0.00214	-0.00216	-0.00217
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00214	-0.00216	-0.00217
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00214	-0.00216	-0.00217
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00215	-0.00217	-0.00218
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00214	-0.00215	-0.00217
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00154	-0.00155	-0.00156

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)	0.00217	0.00218	0.00217
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00218	0.00217
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00218	0.00217
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00219	0.00220	0.00219
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00217	0.00218	0.00217
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00156	0.00157	0.00156

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)	-0.00203	-0.00203	-0.00203
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00203	-0.00204	-0.00203
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00203	-0.00204	-0.00203
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00203	-0.00204	-0.00203
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00203	-0.00204	-0.00203
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00147	-0.00148	-0.00147

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)	0.00204	0.00207	0.00204
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00204	0.00207	0.00204
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00204	0.00205	0.00204
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00204	0.00205	0.00204
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00204	0.00205	0.00204
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00147	0.00149	0.00147

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00359	0.00377	0.00368	0.32504

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00014	0.00031

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)	0.21782	1.57318	13.32020
	A1->Y (FR)	0.18511	1.49846	13.00610
	B0->Y (FR)	0.16751	1.48505	13.15350

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)	0.07358	0.69631	6.68082
	A1->Y (RF)	0.06660	0.69749	6.86976
	B0->Y (RF)	0.04283	0.62677	6.42319

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	0.00508	0.00502	0.00499
	A1	0.00000	0.00000	0.00000
	A1	0.00429	0.00420	0.00417
	B0	0.00414	0.00398	0.00399

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	0.00098	0.00083	0.00074
	A1	0.00000	0.00000	0.00000
	A1	0.00099	0.00083	0.00073
	B0	-0.00036	-0.00038	-0.00045

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)	-0.00176	-0.00183	-0.00182
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00187	-0.00188	-0.00187
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00187	-0.00188	-0.00187

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)	0.00182	0.00184	0.00182
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00187	0.00189	0.00188
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00188	0.00189	0.00188

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)	-0.00173	-0.00179	-0.00179
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00183	-0.00184	-0.00184
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00200	-0.00200	-0.00202

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)	0.00179	0.00179	0.00179
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00183	0.00185	0.00185
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00202	0.00204	0.00203

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)	-0.00098	-0.00098	-0.00098

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)	0.00111	0.00111	0.00102

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00358	0.00374	0.00392	0.00371	0.32869

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00016	0.00026

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)	0.27136	1.62738	13.36820
	A1->Y (FR)	0.24259	1.58503	13.26150
	B0->Y (FR)	0.17502	1.47581	13.05600
	B1->Y (FR)	0.20358	1.51321	13.17960

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)	0.09346	0.72059	6.73977
	A1->Y (RF)	0.08643	0.72314	6.93106
	B0->Y (RF)	0.05556	0.68502	6.87988
	B1->Y (RF)	0.06214	0.68209	6.69067

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	0.00626	0.00618	0.00615
	A1	0.00547	0.00536	0.00532
	B0	0.00446	0.00429	0.00424
	B1	0.00520	0.00495	0.00503

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00202	0.00189	0.00176
	A1	0.00203	0.00190	0.00176
	B0	-0.00014	-0.00017	-0.00024
	B1	-0.00013	-0.00015	-0.00022

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)	-0.00177	-0.00183	-0.00182
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00187	-0.00188	-0.00187
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00187	-0.00188	-0.00187
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00187	-0.00188	-0.00187

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)	0.00182	0.00183	0.00182
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00187	0.00189	0.00188
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00188	0.00189	0.00188
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00188	0.00189	0.00188

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)	-0.00174	-0.00180	-0.00179
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00183	-0.00185	-0.00184
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00199	-0.00201	-0.00202
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00199	-0.00201	-0.00202

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)	0.00178	0.00180	0.00179
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00183	0.00187	0.00184
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00201	0.00203	0.00203
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00201	0.00203	0.00203

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)	-0.00099	-0.00099	-0.00099
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00098	-0.00099	-0.00098
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00207	-0.00209	-0.00210
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00207	-0.00209	-0.00210

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)	0.00116	0.00116	0.00103
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00098	0.00099	0.00098
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00210	0.00212	0.00210
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00210	0.00212	0.00210

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)	-0.00099	-0.00100	-0.00099
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00099	-0.00100	-0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00191	-0.00192	-0.00191
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00191	-0.00192	-0.00191

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)	0.00117	0.00117	0.00104
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00099	0.00100	0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00192	0.00193	0.00192
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00192	0.00193	0.00192

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00395	0.73006
sky130_osu_sc_15T_ls__buf_2	0.00399	1.46990
sky130_osu_sc_15T_ls__buf_4	0.00398	2.86420
sky130_osu_sc_15T_ls__buf_6	0.00091	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00398	5.54416
sky130_osu_sc_15T_ls__buf_l	0.00310	0.45881

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00018	0.00018
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00027	0.00031
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00045	0.00056
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00082	0.00107
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00031	0.00031

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)**	0.11427	1.01682	8.51232
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.12506	0.91646	8.87573
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.16814	0.89621	9.36227
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.25353	0.94814	9.96805
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.13355	1.14474	8.30762

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)**	0.14138	0.85171	6.88751
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.17684	0.86368	7.48239
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.26063	0.92792	8.09667
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.42654	1.09904	8.80434
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.16484	0.88670	6.55001

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	0.00248	0.00210	0.00209
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00477	0.00452	0.00453
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.00984	0.00997	0.01015
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01986	0.02063	0.02090
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00186	0.00157	0.00154

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	0.00605	0.00585	0.00589
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00770	0.00780	0.00783
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01173	0.01248	0.01258
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.01970	0.02165	0.02214
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00466	0.00447	0.00449

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
	-0.00039	-0.00040	-0.00040

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
	0.00039	0.00040	0.00040

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00369	0.00372	0.01121	0.69765	0.69982
sky130_osu_sc_15T_ls__dffr_l	0.00369	0.00372	0.01119	0.45894	0.46353

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00106	0.00131
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00119	0.00144

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)	0.82051	2.33741	15.29950
	QN->Q (FR)	0.07375	1.25348	14.13490
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.78707	2.41416	14.45220
	QN->Q (FR)	0.08710	1.34951	13.82890

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)	0.68683	2.38346	17.71400
	QN->Q (RF)	0.03846	0.73533	8.61278
	RN->Q (FF)	0.47936	2.33795	19.96280
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.70693	2.57343	17.03550
	QN->Q (RF)	0.03914	0.71823	7.89042
	RN->Q (FF)	0.50082	2.52723	19.26700

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)	0.60721	1.54810	9.32078
	RN->QN (FR)	0.39892	1.50143	11.56970
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.61753	1.67600	9.40549
	RN->QN (FR)	0.41023	1.62954	11.64330

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)**	0.69622	1.31632	5.15773
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.64924	1.26178	4.69530

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)	-0.12402	-0.15952	-0.87898
	setup	CK (R)	0.63608	0.63494	1.89841
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.12478	-0.15952	-0.88026
	setup	CK (R)	0.64130	0.64095	1.93291

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)	-0.31023	-0.70874	-7.85269
	setup	CK (R)	0.36068	0.73901	7.91838
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.30756	-0.70753	-7.85045
	setup	CK (R)	0.36049	0.73901	7.91811

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)	-0.12402	-0.15952	-0.87898
	setup	CK (R)	0.63608	0.63494	1.89841
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.12478	-0.15952	-0.88026
	setup	CK (R)	0.64130	0.64095	1.93291

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)	-0.31023	-0.70874	-7.85269
	setup	CK (R)	0.36068	0.73901	7.91838
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.30756	-0.70753	-7.85045
	setup	CK (R)	0.36049	0.73901	7.91811

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)	0.57038	0.56936	1.64754
	removal	CK (R)	-0.11032	-0.12897	-0.16824
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.56930	0.57382	1.66034
	removal	CK (R)	-0.11032	-0.12897	-0.16824

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)	0.57038	0.56936	1.64754
	removal	CK (R)	-0.11032	-0.12897	-0.16824
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.56930	0.57382	1.66034
	removal	CK (R)	-0.11032	-0.12897	-0.16824

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 ()	0.29320	0.66488	13.33370
	min_pulse_width	RN ()	0.28978	0.66270	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.29136	0.66053	13.33370
	min_pulse_width	RN ()	0.28637	0.66053	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 ()	0.37054	0.54077	13.33370
	min_pulse_width	CK ()	0.37257	0.54077	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.33812	0.54077	13.33370
	min_pulse_width	CK ()	0.36243	0.54077	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 ()	0.80334	0.86955	13.33370
	min_pulse_width	CK ()	0.29422	0.63875	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.80735	0.87391	13.33370
	min_pulse_width	CK ()	0.29422	0.63875	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	0.00601	0.00526	0.00012
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00529	0.00464	0.00203

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	0.00686	0.00635	0.00324
	RN	-0.00085	-0.02970	-0.31787
	RN	0.01535	0.01493	0.01162
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00612	0.00573	0.00426
	RN	-0.00085	-0.02310	-0.20911
	RN	0.01461	0.01430	0.01261

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	0.00686	0.00636	0.00324
	RN	-0.00085	-0.02976	-0.31885
	RN	0.01536	0.01493	0.01156
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00612	0.00574	0.00426
	RN	-0.00085	-0.02324	-0.21120
	RN	0.01461	0.01430	0.01259

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	0.00598	0.00524	0.00001
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00527	0.00462	0.00180

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	-0.00170	-0.00181	-0.00181
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00703	0.00672	0.00651
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00303	0.00277	0.00258
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00170	-0.00181	-0.00181
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00703	0.00672	0.00651
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00303	0.00277	0.00258

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	0.00180	0.00181	0.00181
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01132	0.01117	0.01096
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00540	0.00525	0.00520
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00180	0.00181	0.00181
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01132	0.01117	0.01096
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00540	0.00525	0.00520

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)	0.00234	0.00197	0.00189
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00661	0.00609	0.00588
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)	0.00234	0.00197	0.00189
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00661	0.00609	0.00588

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)	0.00559	0.00534	0.00537
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01152	0.01115	0.01093
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)	0.00559	0.00534	0.00537
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01152	0.01115	0.01093

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)	-0.00026	-0.00068	-0.00083
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00350	0.00284	0.00240
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00049	-0.00093	-0.00107
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00026	-0.00068	-0.00083
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00350	0.00284	0.00240
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00049	-0.00093	-0.00107

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)	0.00887	0.00855	0.00844
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01825	0.01772	0.01713
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01381	0.01352	0.01319
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01801	0.01739	0.01715
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00966	0.00935	0.00932
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00887	0.00855	0.00844
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01825	0.01772	0.01713
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01381	0.01352	0.01319
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01801	0.01739	0.01715
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00966	0.00935	0.00932

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00365	0.00372	0.00817	0.01147	0.74195	0.74505
sky130_osu_sc_15T_ls__dffsr_l	0.00365	0.00372	0.00816	0.01146	0.45944	0.46282

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00097	0.00126
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00110	0.00139

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)	0.76537	2.28996	15.78370
	QN->Q (FR)	0.06635	1.19277	13.69020
	RN->Q (RR)	0.61922	2.16047	15.82940
	SN->Q (FR)	0.59874	2.27233	18.74170
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.75804	2.38798	14.56000
	QN->Q (FR)	0.08722	1.35910	13.82320
	RN->Q (RR)	0.61184	2.26030	14.61330
	SN->Q (FR)	0.58842	2.36894	17.47220

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)	0.78548	2.48324	18.12110
	QN->Q (RF)	0.03810	0.74815	8.84491
	RN->Q (FF)	0.50575	2.35705	20.38450
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.81539	2.69051	17.16950
	QN->Q (RF)	0.03906	0.71771	7.88849
	RN->Q (FF)	0.53776	2.56567	19.43360

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)	0.70614	1.64184	9.44854
	RN->QN (FR)	0.42810	1.51625	11.72620
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.72396	1.79005	9.51513
	RN->QN (FR)	0.44723	1.66617	11.78440

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)	0.65489	1.28123	5.43068
	RN->QN (RF)	0.50840	1.15488	5.48391
	SN->QN (FF)	0.48557	1.26237	8.39128
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.62858	1.23990	4.79819
	RN->QN (RF)	0.48229	1.11447	4.85225
	SN->QN (FF)	0.45962	1.22248	7.70137

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)	-0.13145	-0.16924	-0.98278
	setup	CK (R)	0.57756	0.56941	1.86211
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.13142	-0.16920	-0.98371
	setup	CK (R)	0.57770	0.57039	1.86451

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)	-0.36381	-0.75371	-8.13786
	setup	CK (R)	0.43163	0.77752	8.18131
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.36077	-0.75371	-8.13616
	setup	CK (R)	0.43055	0.77752	8.17599

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)	-0.13145	-0.16924	-0.98278
	setup	CK (R)	0.57756	0.56941	1.86211
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.13142	-0.16920	-0.98371
	setup	CK (R)	0.57770	0.57039	1.86451

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)	-0.36381	-0.75371	-8.13786
	setup	CK (R)	0.43163	0.77752	8.18131
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.36077	-0.75371	-8.13616
	setup	CK (R)	0.43055	0.77752	8.17599

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)	0.46146	0.46088	1.51035
	removal	CK (R)	-0.05421	-0.06332	-0.11845
	hold	SN (R)	-0.48303	-0.76144	-5.95378
	setup	SN (R)	0.51069	0.81851	7.65931
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.46161	0.45814	1.50608
	removal	CK (R)	-0.05421	-0.06332	-0.11545
	hold	SN (R)	-0.45637	-0.73734	-5.84303
	setup	SN (R)	0.50830	0.79029	7.52745

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)	0.46146	0.46088	1.51035
	removal	CK (R)	-0.05421	-0.06332	-0.11845
	hold	SN (R)	-0.48303	-0.76144	-5.95378
	hold	SN (R)	-0.48473	-0.76445	-5.96283
	setup	SN (R)	0.51069	0.81122	7.61234
	setup	SN (R)	0.50691	0.81851	7.65931
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.46161	0.45814	1.50608
	removal	CK (R)	-0.05421	-0.06332	-0.11545
	hold	SN (R)	-0.46443	-0.73734	-5.84303
	hold	SN (R)	-0.45637	-0.74030	-5.85645
	setup	SN (R)	0.50830	0.78855	7.45266
	setup	SN (R)	0.47820	0.79029	7.52745

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 ()	0.32835	0.68665	13.33370
	min_pulse_width	RN ()	0.34133	0.68665	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.33511	0.68448	13.33370
	min_pulse_width	RN ()	0.33252	0.68448	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)	0.07319	0.10198	1.52358
	removal	CK (R)	-0.02029	-0.06280	-0.65455
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.07074	0.10135	1.39960
	removal	CK (R)	-0.01987	-0.06280	-0.65750

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)	0.07319	0.10198	1.52358
	removal	CK (R)	-0.02029	-0.06280	-0.65455
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.07074	0.10135	1.39960
	removal	CK (R)	-0.01987	-0.06280	-0.65750

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 ()	0.48601	0.84125	13.33370
	min_pulse_width	SN ()	0.48526	0.84560	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.47925	0.81294	13.33370
	min_pulse_width	SN ()	0.45692	0.81730	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 ()	0.33812	0.54077	13.33370
	min_pulse_width	CK ()	0.41715	0.54077	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.32190	0.54077	13.33370
	min_pulse_width	CK ()	0.40904	0.54077	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 ()	0.74518	0.79988	13.33370
	min_pulse_width	CK ()	0.37277	0.68230	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.74416	0.80205	13.33370
	min_pulse_width	CK ()	0.37019	0.68230	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	0.00735	0.00658	0.00109
	RN	0.01364	0.01302	0.00739
	SN	-0.00085	-0.03082	-0.33805
	SN	0.01482	0.01430	0.00871
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00671	0.00609	0.00348
	RN	0.01299	0.01252	0.00978
	SN	-0.00085	-0.02312	-0.20933
	SN	0.01418	0.01380	0.01102

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	0.00783	0.00751	0.00561
	RN	-0.00085	-0.03082	-0.33805
	RN	0.01600	0.01568	0.01358
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00716	0.00682	0.00538
	RN	-0.00085	-0.02312	-0.20933
	RN	0.01531	0.01497	0.01334

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	0.00783	0.00752	0.00561
	RN	-0.00085	-0.03090	-0.33947
	RN	0.01600	0.01568	0.01357
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00717	0.00683	0.00538
	RN	-0.00085	-0.02322	-0.21087
	RN	0.01532	0.01497	0.01333

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	0.00732	0.00655	0.00080
	RN	0.01361	0.01300	0.00712
	SN	-0.00085	-0.03090	-0.33944
	SN	0.01480	0.01427	0.00864
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00668	0.00605	0.00325
	RN	0.01296	0.01249	0.00960
	SN	-0.00085	-0.02322	-0.21086
	SN	0.01416	0.01377	0.01088

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	-0.00175	-0.00181	-0.00181
	(!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)	0.00897	0.00870	0.00850
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00340	0.00316	0.00298
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00339	0.00314	0.00297
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00344	0.00319	0.00301
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00175	-0.00181	-0.00181
	(!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)	0.00897	0.00870	0.00850
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00341	0.00315	0.00298
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00339	0.00314	0.00297
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00344	0.00319	0.00301

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	0.00181	0.00181	0.00181
	(!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)	0.01294	0.01280	0.01248
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00581	0.00566	0.00563
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00583	0.00568	0.00564
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00578	0.00563	0.00560
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00181	0.00181	0.00181
	(!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)	0.01294	0.01280	0.01247
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00580	0.00566	0.00562
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00582	0.00567	0.00563
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00577	0.00563	0.00559

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)	0.00223	0.00188	0.00171
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00806	0.00754	0.00724
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)	0.00224	0.00188	0.00171
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00806	0.00754	0.00724

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)	0.00614	0.00588	0.00591
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01232	0.01189	0.01162
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)	0.00613	0.00587	0.00591
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01231	0.01188	0.01162

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)	-0.00423	-0.00428	-0.00429
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00447	-0.00453	-0.00453
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00427	-0.00430	-0.00430
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00258	0.00228	0.00203
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)	-0.00423	-0.00428	-0.00429
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00446	-0.00452	-0.00452
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00426	-0.00430	-0.00430
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00258	0.00229	0.00203

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)	0.00428	0.00432	0.00431
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00452	0.00453	0.00453
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00428	0.00433	0.00430
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00930	0.00909	0.00904
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)	0.00428	0.00432	0.00431
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00451	0.00452	0.00452
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00428	0.00433	0.00430
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00929	0.00908	0.00903

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)	-0.00026	-0.00066	-0.00083
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00403	0.00341	0.00298
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00398	0.00338	0.00293
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00037	-0.00082	-0.00095
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00280	0.00202	0.00179
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00026	-0.00066	-0.00083
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00402	0.00340	0.00298
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00398	0.00337	0.00293
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00037	-0.00082	-0.00095
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00280	0.00202	0.00179

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)	0.02031	0.01980	0.01920
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00890	0.00858	0.00849
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01403	0.01380	0.01348
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01408	0.01386	0.01353
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01959	0.01893	0.01859
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00957	0.00927	0.00924
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01177	0.01118	0.01113
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02031	0.01980	0.01920
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00890	0.00858	0.00849
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01403	0.01380	0.01348
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01408	0.01386	0.01353
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01958	0.01892	0.01858
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00957	0.00927	0.00924
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01176	0.01117	0.01112

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00368	0.00663	0.01120	0.69799	0.70290
sky130_osu_sc_15T_ls__dffs_l	0.00368	0.00663	0.01120	0.45975	0.46613

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00089	0.00118
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00102	0.00131

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)	0.54506	2.02637	15.00720
	QN->Q (FR)	0.07393	1.24037	14.09390
	SN->Q (FR)	0.45004	2.10675	18.02030
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.53728	2.13607	14.22340
	QN->Q (FR)	0.08717	1.35574	13.81320
	SN->Q (FR)	0.43962	2.21619	17.16140

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)	0.76037	2.45929	17.76140
	QN->Q (RF)	0.03825	0.73310	8.59288
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.77486	2.64399	17.10560
	QN->Q (RF)	0.03897	0.71580	7.88026

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)	0.67770	1.62509	9.40817
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.68345	1.74753	9.50180

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)	0.43934	1.01846	4.89966
	SN->QN (FF)	0.34228	1.10133	7.91012
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.41681	0.99394	4.48043
	SN->QN (FF)	0.31770	1.07590	7.41715

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)	-0.09648	-0.13630	-0.84390
	setup	CK (R)	0.39118	0.39696	1.76617
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.09567	-0.13626	-0.84063
	setup	CK (R)	0.39121	0.39810	1.78146

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)	-0.32034	-0.71766	-7.91596
	setup	CK (R)	0.40699	0.74981	7.98762
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.32208	-0.71920	-7.91813
	setup	CK (R)	0.40625	0.74976	7.98792

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)	-0.09648	-0.13630	-0.84390
	setup	CK (R)	0.39118	0.39696	1.76617
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.09567	-0.13626	-0.84063
	setup	CK (R)	0.39121	0.39810	1.78146

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)	-0.32034	-0.71766	-7.91596
	setup	CK (R)	0.40699	0.74981	7.98762
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.32208	-0.71920	-7.91813
	setup	CK (R)	0.40625	0.74976	7.98792

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)	0.08167	0.10585	1.07702
	removal	CK (R)	-0.02192	-0.05536	-0.38988
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.08132	0.10546	0.97132
	removal	CK (R)	-0.02210	-0.05536	-0.38988

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)	0.08167	0.10585	1.07702
	removal	CK (R)	-0.02192	-0.05536	-0.38988
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.08132	0.10546	0.97132
	removal	CK (R)	-0.02210	-0.05536	-0.38988

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 ()	0.32620	0.77810	13.33370
	min_pulse_width	SN ()	0.33210	0.77810	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.31196	0.74980	13.33370
	min_pulse_width	SN ()	0.30798	0.75415	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 ()	0.20639	0.54077	13.33370
	min_pulse_width	CK ()	0.39689	0.54077	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.19423	0.54077	13.33370
	min_pulse_width	CK ()	0.38473	0.54077	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 ()	0.55650	0.67359	13.33370
	min_pulse_width	CK ()	0.34539	0.65399	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.55725	0.67141	13.33370
	min_pulse_width	CK ()	0.34428	0.65182	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	0.00601	0.00521	0.00018
	SN	-0.00085	-0.02971	-0.31802
	SN	0.01279	0.01217	0.00703
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00528	0.00459	0.00199
	SN	-0.00085	-0.02313	-0.20947
	SN	0.01206	0.01156	0.00877

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	0.00684	0.00638	0.00334
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00611	0.00575	0.00432

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	0.00685	0.00638	0.00332
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00611	0.00575	0.00430

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	0.00598	0.00518	0.00014
	SN	-0.00085	-0.02984	-0.32023
	SN	0.01277	0.01214	0.00691
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00526	0.00456	0.00182
	SN	-0.00085	-0.02332	-0.21237
	SN	0.01203	0.01153	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	-0.00178	-0.00184	-0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00688	0.00658	0.00629
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00296	0.00270	0.00252
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00178	-0.00184	-0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00688	0.00658	0.00629
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00296	0.00270	0.00252

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	0.00184	0.00184	0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01126	0.01109	0.01089
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00553	0.00539	0.00534
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00184	0.00184	0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01126	0.01109	0.01089
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00553	0.00539	0.00534

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)	-0.00313	-0.00314	-0.00315
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00238	0.00210	0.00200
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)	-0.00313	-0.00314	-0.00315
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00238	0.00210	0.00200

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)	0.00316	0.00315	0.00315
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00660	0.00629	0.00626
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)	0.00316	0.00315	0.00315
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00660	0.00629	0.00626

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)	-0.00028	-0.00070	-0.00085
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00046	-0.00090	-0.00104
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00234	0.00155	0.00132
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00028	-0.00070	-0.00085
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00046	-0.00090	-0.00104
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00234	0.00155	0.00132

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)	0.01815	0.01762	0.01697
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00888	0.00856	0.00846
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01788	0.01718	0.01698
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00963	0.00932	0.00929
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01145	0.01085	0.01082
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01815	0.01762	0.01697
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00888	0.00856	0.00846
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01788	0.01718	0.01698
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00963	0.00932	0.00929
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01145	0.01085	0.01082

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00383	0.01095	0.74038	0.74862
sky130_osu_sc_15T_ls__dff_l	0.00383	0.01094	0.43737	0.43884

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00076	0.00086
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00089	0.00099

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)	0.43984	1.92178	15.34270
	QN->Q (FR)	0.06592	1.18670	13.64890
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.45346	2.04683	13.93710
	QN->Q (FR)	0.09501	1.41987	14.23600

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)	0.66855	2.35463	17.92020
	QN->Q (RF)	0.03795	0.74654	8.82296
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.71102	2.59297	16.88580
	QN->Q (RF)	0.03906	0.70741	7.73086

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)	0.59205	1.52021	9.33239
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.61904	1.69477	9.38872

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)	0.34554	0.92425	5.04733
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.33545	0.89451	4.28558

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)	-0.09158	-0.13431	-0.88140
	setup	CK (R)	0.28633	0.29328	1.74161
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.09192	-0.13622	-0.88254
	setup	CK (R)	0.28350	0.29281	1.74561

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)	-0.31317	-0.72532	-8.00772
	setup	CK (R)	0.36938	0.75901	8.09103
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.31168	-0.72315	-8.00879
	setup	CK (R)	0.37122	0.75887	8.09242

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 ()	0.16991	0.54077	13.33370
	min_pulse_width	CK ()	0.37257	0.54077	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.16383	0.54077	13.33370
	min_pulse_width	CK ()	0.36041	0.54077	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 ()**	0.45050	0.64528	13.33370
	min_pulse_width	**CK ()**	0.29885	0.66053	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.45050	0.64528	13.33370
	min_pulse_width	**CK ()**	0.29885	0.66053	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	0.00634	0.00544	0.00008
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00570	0.00498	0.00249

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	0.00694	0.00661	0.00474
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00628	0.00584	0.00373

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	0.00694	0.00662	0.00474
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00628	0.00585	0.00374

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	0.00632	0.00541	-0.00028
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00567	0.00496	0.00234

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	-0.00170	-0.00180	-0.00180
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00648	0.00621	0.00595
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00170	-0.00180	-0.00180
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00649	0.00622	0.00596

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	0.00179	0.00180	0.00180
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01172	0.01151	0.01128
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00179	0.00180	0.00180
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01172	0.01151	0.01129

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)	-0.00028	-0.00067	-0.00084
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00045	-0.00089	-0.00102
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00028	-0.00067	-0.00084
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00045	-0.00089	-0.00102

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)	0.00883	0.00851	0.00838
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01773	0.01722	0.01661
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01819	0.01747	0.01724
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00957	0.00926	0.00923
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00883	0.00851	0.00838
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.01774	0.01722	0.01661
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.01819	0.01747	0.01724
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00957	0.00926	0.00923

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00377	0.72465
sky130_osu_sc_15T_ls__inv_10	0.03462	6.90239
sky130_osu_sc_15T_ls__inv_2	0.00711	1.44834
sky130_osu_sc_15T_ls__inv_3	0.01058	2.11255
sky130_osu_sc_15T_ls__inv_4	0.01396	2.83727
sky130_osu_sc_15T_ls__inv_6	0.02092	4.21923
sky130_osu_sc_15T_ls__inv_8	0.02777	5.56815
sky130_osu_sc_15T_ls__inv_l	0.00286	0.43814

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00009	0.00013
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00091	0.00127
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00018	0.00025
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00027	0.00038
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00036	0.00051
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00054	0.00076
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00073	0.00102
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00016	0.00018

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)**	0.06431	1.14390	13.08500
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.07320	0.77691	13.13620
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.04851	0.97985	13.05440
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.05156	0.91524	13.08380
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.05059	0.86777	13.06850
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.05530	0.81885	13.09230
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.06338	0.79123	13.08170
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.08622	1.30684	13.18030

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)**	0.03408	0.68217	8.06007
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.04545	0.50323	8.14282
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02768	0.61074	8.07615
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02976	0.58499	8.15250
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02931	0.55886	8.13940
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.03429	0.53189	8.16228
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03961	0.51397	8.15720
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.03602	0.66507	7.23220

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	0.00309	0.00304	0.00304
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02621	0.02636	0.02692
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00546	0.00542	0.00547
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00839	0.00807	0.00841
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01075	0.01035	0.01086
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01595	0.01592	0.01626
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02112	0.02111	0.02160
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00233	0.00227	0.00226

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	-0.00045	-0.00050	-0.00051
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00886	-0.00864	-0.00779
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00160	-0.00165	-0.00162
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00206	-0.00217	-0.00206
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00329	-0.00333	-0.00317
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00503	-0.00507	-0.00471
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00686	-0.00693	-0.00625
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00030	-0.00034	-0.00037

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.42499	0.42706	0.00771	0.66534

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00025	0.00025

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)	-	0.03389	0.70676	8.42321
	A1->Y (RR)	-	0.03978	0.71162	8.42961
	S0->Y (RR)	(!A0 * A1)	0.09191	0.82333	7.55871
	S0->Y (FR)	(A0 * !A1)	0.07510	0.95333	9.37327

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)	-	0.03079	0.61800	7.26493
	A1->Y (FF)	-	0.02712	0.61328	7.24565
	S0->Y (FF)	(!A0 * A1)	0.14620	0.82746	6.82372
	S0->Y (RF)	(A0 * !A1)	0.03798	0.65777	7.13257

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	-	-0.00322	-0.00322	-0.00322
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00223	-0.00223	-0.00223
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00387	0.00360	0.00366
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00195	-0.00237	-0.00241

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	-	0.00322	0.00322	0.00323
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00223	0.00223	0.00223
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00079	0.00039	0.00035
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00824	0.00796	0.00799

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)	-0.00085	-0.00085	-0.00085

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)	0.00085	0.00085	0.00085

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)	-0.00101	-0.00101	-0.00101

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)	0.00101	0.00101	0.00101

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)	-0.00059	-0.00102	-0.00104
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00058	-0.00099	-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)	0.00626	0.00600	0.00602
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00584	0.00557	0.00562

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00377	0.00373	0.71962
sky130_osu_sc_15T_ls__nand2_l	0.00285	0.00285	0.43598

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00010	0.00013
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00016	0.00026

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)	0.06786	1.14658	13.08600
	B->Y (FR)	0.07944	1.14935	12.96500
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.08957	1.31170	13.17510
	B->Y (FR)	0.10512	1.32484	13.16840

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)	0.05419	0.87328	9.93214
	B->Y (RF)	0.06121	0.87362	9.77861
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.05736	0.85444	8.78519
	B->Y (RF)	0.06366	0.84770	8.57730

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	0.00328	0.00323	0.00322
	B	0.00000	0.00000	0.00000
	B	0.00406	0.00399	0.00397
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00244	0.00238	0.00236
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00292	0.00292

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	-0.00020	-0.00027	-0.00029
	B	0.00000	0.00000	0.00000
	B	-0.00019	-0.00024	-0.00026
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00017	-0.00021	-0.00023
	B	0.00000	0.00000	0.00000
	B	-0.00015	-0.00019	-0.00021

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)	-0.00209	-0.00211	-0.00212
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00147	-0.00148	-0.00149

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)	0.00212	0.00213	0.00212
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00149	0.00150	0.00149

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)	-0.00194	-0.00195	-0.00194
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00137	-0.00137	-0.00137

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)	0.00195	0.00196	0.00195
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00138	0.00138	0.00138

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00372	0.00403	0.34053
sky130_osu_sc_15T_ls__nor2_l	0.00274	0.00308	0.21829

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00010	0.00025
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00017	0.00037

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)	0.16263	1.48205	13.20150
	B->Y (FR)	0.13392	1.42087	12.98200
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.19908	1.68117	13.18330
	B->Y (FR)	0.17494	1.63315	13.14690

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)	0.04211	0.58584	6.00716
	B->Y (RF)	0.03587	0.57498	5.98790
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.04221	0.57471	5.47706
	B->Y (RF)	0.03767	0.56663	5.45939

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	0.00419	0.00412	0.00409
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00325	0.00256
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00299	0.00294	0.00290
	B	0.00000	0.00000	0.00000
	B	0.00251	0.00241	0.00238

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	0.00042	0.00028	0.00021
	B	0.00000	0.00000	0.00000
	B	-0.00037	-0.00040	-0.00048
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00026	0.00017	0.00012
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00025	-0.00031

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)	-0.00170	-0.00182	-0.00182
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00116	-0.00123	-0.00123

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)	0.00181	0.00182	0.00182
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00122	0.00124	0.00123

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)	-0.00099	-0.00099	-0.00099
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00067	-0.00067	-0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00105	0.00105	0.00101
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00071	0.00071	0.00068

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00376	0.00381	0.00324	0.33887

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00015	0.00023

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)	0.18534	1.48680	13.16220
	A1->Y (FR)	0.22169	1.55763	13.35090
	B0->Y (FR)	0.10690	1.17921	11.32130

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)	0.07246	0.71901	6.94180
	A1->Y (RF)	0.08205	0.71861	6.87607
	B0->Y (RF)	0.05839	0.72463	7.27699

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	0.00449	0.00436	0.00433
	A1	0.00000	0.00000	0.00000
	A1	0.00534	0.00525	0.00521
	B0	0.00362	0.00350	0.00348

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	0.00026	0.00023	0.00016
	A1	0.00000	0.00000	0.00000
	A1	0.00108	0.00095	0.00087
	B0	0.00148	0.00142	0.00136

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)	-0.00099	-0.00099	-0.00099
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00176	-0.00182	-0.00183
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00188	-0.00188	-0.00189

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)	0.00106	0.00106	0.00101
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00182	0.00182	0.00183
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00188	0.00190	0.00189

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)	-0.00166	-0.00178	-0.00177
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00174	-0.00182	-0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00185	-0.00187	-0.00186

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)	0.00177	0.00179	0.00177
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00181	0.00184	0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00185	0.00189	0.00186

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)	-0.00150	-0.00152	-0.00155

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)	0.00155	0.00157	0.00156

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00360	0.00386	0.00399	0.00387	0.34501

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00016	0.00026

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)	0.24385	1.57742	13.38880
	A1->Y (FR)	0.21256	1.51277	13.20810
	B0->Y (FR)	0.14739	1.44381	13.14040
	B1->Y (FR)	0.18131	1.50921	13.32520

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)	0.10910	0.77225	7.06898
	A1->Y (RF)	0.09156	0.74972	7.02575
	B0->Y (RF)	0.07711	0.75072	7.36225
	B1->Y (RF)	0.09554	0.77542	7.43231

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	0.00684	0.00677	0.00672
	A1	0.00597	0.00584	0.00579
	B0	0.00443	0.00430	0.00426
	B1	0.00533	0.00525	0.00519

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00161	0.00148	0.00141
	A1	0.00085	0.00082	0.00072
	B0	0.00085	0.00081	0.00071
	B1	0.00163	0.00149	0.00140

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)	-0.00170	-0.00182	-0.00181
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00170	-0.00182	-0.00181
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00175	-0.00182	-0.00182
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00186	-0.00187	-0.00187

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)	0.00180	0.00182	0.00181
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00180	0.00182	0.00181
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00181	0.00182	0.00182
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00186	0.00187	0.00187

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)	-0.00098	-0.00099	-0.00098
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00098	-0.00099	-0.00098
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00173	-0.00181	-0.00179
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00185	-0.00186	-0.00185

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)	0.00104	0.00105	0.00100
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00104	0.00105	0.00100
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00179	0.00181	0.00179
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00185	0.00186	0.00186

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)	-0.00098	-0.00098	-0.00097
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00098	-0.00098	-0.00097
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00196	-0.00204	-0.00203
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00201	-0.00202	-0.00208

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)	0.00103	0.00104	0.00099
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00103	0.00104	0.00099
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00203	0.00204	0.00203
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00208	0.00210	0.00209

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)	-0.00167	-0.00179	-0.00178
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00167	-0.00178	-0.00178
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00202	-0.00210	-0.00208
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00205	-0.00208	-0.00212

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)	0.00177	0.00179	0.00178
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00177	0.00178	0.00178
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00208	0.00210	0.00208
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00212	0.00214	0.00213

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00407	0.00386	0.72399
sky130_osu_sc_15T_ls__or2_2	0.00407	0.00386	1.44913
sky130_osu_sc_15T_ls__or2_4	0.00406	0.00385	2.84162
sky130_osu_sc_15T_ls__or2_8	0.00407	0.00386	5.48985
sky130_osu_sc_15T_ls__or2_l	0.00315	0.00291	0.43547

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00021	0.00031
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00032	0.00036
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00054	0.00057
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00098	0.00108
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00034	0.00049

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)	0.12976	1.05292	8.68507
	B->Y (RR)	0.12011	1.02502	8.49802
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.13864	0.94256	8.95664
	B->Y (RR)	0.12817	0.91978	8.80154
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.18207	0.91814	9.46282
	B->Y (RR)	0.17127	0.90151	9.34880
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.26732	0.96531	10.03470
	B->Y (RR)	0.25630	0.95225	9.96312
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.14839	1.19736	8.54705
	B->Y (RR)	0.13952	1.17218	8.38343

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)	0.30422	1.04829	7.72925
	B->Y (FF)	0.26228	0.98075	7.22309
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.38277	1.09535	8.14206
	B->Y (FF)	0.34086	1.02835	7.71553
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.55946	1.27443	8.79622
	B->Y (FF)	0.51766	1.20459	8.47976
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.90836	1.66013	9.58324
	B->Y (FF)	0.86750	1.58241	9.39072
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.35452	1.08096	7.06225
	B->Y (FF)	0.30714	1.01640	6.68383

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	0.00337	0.00300	0.00288
	B	0.00000	0.00000	0.00000
	B	0.00259	0.00227	0.00225
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00568	0.00548	0.00541
	B	0.00000	0.00000	0.00000
	B	0.00487	0.00480	0.00479
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01077	0.01093	0.01099
	B	0.00000	0.00000	0.00000
	B	0.00995	0.01031	0.01052
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02081	0.02165	0.02188
	B	0.00000	0.00000	0.00000
	B	0.01998	0.02112	0.02463
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00244	0.00219	0.00211
	B	0.00000	0.00000	0.00000
	B	0.00193	0.00171	0.00169

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	0.00715	0.00707	0.00701
	B	0.00000	0.00000	0.00000
	B	0.00612	0.00606	0.00610
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00875	0.00905	0.00901
	B	0.00000	0.00000	0.00000
	B	0.00771	0.00801	0.00805
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01269	0.01362	0.01377
	B	0.00000	0.00000	0.00000
	B	0.01165	0.01255	0.01276
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02054	0.02232	0.02331
	B	0.00000	0.00000	0.00000
	B	0.01953	0.02125	0.02223
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00535	0.00520	0.00516
	B	0.00000	0.00000	0.00000
	B	0.00462	0.00453	0.00457

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)	-0.00173	-0.00184	-0.00183
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00184	-0.00183
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00184	-0.00183
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00173	-0.00184	-0.00183
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00118	-0.00125	-0.00124

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)	0.00182	0.00184	0.00183
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00182	0.00184	0.00183
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00182	0.00184	0.00183
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00182	0.00184	0.00183
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00124	0.00125	0.00124

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)	-0.00099	-0.00099	-0.00099
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00099	-0.00099	-0.00099
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00099	-0.00100	-0.00099
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00099	-0.00100	-0.00099
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00069	-0.00070	-0.00069

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)	0.00106	0.00106	0.00101
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00106	0.00106	0.00101
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00106	0.00106	0.00101
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00106	0.00106	0.00101
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00073	0.00073	0.00070

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00401	0.00516	0.34337
sky130_osu_sc_15T_ls__tbufi_l	0.00308	0.00399	0.21654

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00015	0.00018
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00024	0.00031

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)	0.12624	1.41489	13.03250
	OE->Y (FR)	0.09636	0.51731	4.01455
	OE->Y (RR)	0.18742	1.32419	8.75819
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.16745	1.62056	13.08510
	OE->Y (FR)	0.11418	0.53610	4.01475
	OE->Y (RR)	0.21842	1.50846	8.58586

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)	0.05198	0.69602	7.07407
	OE->Y (FF)	0.09782	0.52037	4.01475
	OE->Y (RF)	0.05129	0.68667	6.87863
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.05619	0.68954	6.42369
	OE->Y (FF)	0.11536	0.54399	4.01458
	OE->Y (RF)	0.05413	0.67552	6.22021

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	0.00314	0.00302	0.00298
	OE	0.00000	0.00000	0.00000
	OE	0.00307	0.00268	0.00267
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00234	0.00224	0.00219
	OE	0.00000	0.00000	0.00000
	OE	0.00217	0.00187	0.00190

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	-0.00037	-0.00041	-0.00047
	OE	0.00000	0.00000	0.00000
	OE	0.00219	0.00180	0.00178
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00025	-0.00031
	OE	0.00000	0.00000	0.00000
	OE	0.00148	0.00118	0.00120

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)	-0.00157	-0.00158	-0.00157
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00144	-0.00145	-0.00145
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00115	-0.00116	-0.00115
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00106	-0.00107	-0.00107

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)	0.00157	0.00158	0.00157
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00149	0.00150	0.00147
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00115	0.00116	0.00115
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00110	0.00110	0.00108

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00124	0.00084	0.00083
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00110	0.00071	0.00070
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00083	0.00053	0.00054
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00073	0.00043	0.00045

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)	0.00361	0.00329	0.00331
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00376	0.00343	0.00341
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00282	0.00257	0.00259
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00292	0.00266	0.00266

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00400	0.00608	0.34605
sky130_osu_sc_15T_ls__tnbufi_l	0.00307	0.00444	0.21826

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00013	0.00026
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00022	0.00037

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)	0.12760	1.41913	13.08990
	OE->Y (RR)	0.03998	0.31025	4.01374
	OE->Y (FR)	0.14702	1.47207	13.27020
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.16873	1.62545	13.14500
	OE->Y (RR)	0.03950	0.31006	4.01375
	OE->Y (FR)	0.18194	1.66708	13.16830

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)	0.05094	0.69563	7.09791
	OE->Y (RF)	0.03965	0.31021	4.01379
	OE->Y (FF)	0.11902	0.83047	6.00411
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.05488	0.69052	6.44563
	OE->Y (RF)	0.03904	0.31001	4.01376
	OE->Y (FF)	0.13738	0.85210	5.64986

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	0.00324	0.00312	0.00307
	OE	0.00000	0.00000	0.00000
	OE	0.00762	0.00742	0.00751
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00244	0.00233	0.00229
	OE	0.00000	0.00000	0.00000
	OE	0.00555	0.00538	0.00545

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	-0.00049	-0.00052	-0.00059
	OE	0.00000	0.00000	0.00000
	OE	0.00686	0.00666	0.00673
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00037	-0.00043
	OE	0.00000	0.00000	0.00000
	OE	0.00495	0.00477	0.00486

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)	-0.00133	-0.00134	-0.00134
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00122	-0.00123	-0.00122
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00092	-0.00093	-0.00093
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00085	-0.00085	-0.00085

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)	0.00133	0.00134	0.00134
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00126	0.00127	0.00125
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00092	0.00093	0.00093
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00087	0.00087	0.00086

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)	-0.00208	-0.00258	-0.00261
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00197	-0.00252	-0.00258
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00136	-0.00172	-0.00172
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00130	-0.00169	-0.00170

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)	0.00580	0.00559	0.00568
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00568	0.00547	0.00557
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00422	0.00403	0.00413
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00413	0.00396	0.00405

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00794	0.00699	0.34815

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00037	0.00052

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	0.24194	1.39930	9.05462
	A->Y (FR)	!B	0.17056	1.47061	13.15800
	B->Y (RR)	A	0.19858	1.35084	8.93247
	B->Y (FR)	!A	0.20511	1.52984	13.32450

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	0.19038	0.93288	6.49691
	A->Y (RF)	!B	0.07269	0.70644	6.93023
	B->Y (FF)	A	0.17630	0.91562	6.46692
	B->Y (RF)	!A	0.08246	0.72018	6.94888

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	0.00308	0.00264	0.00257
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00779	0.00741	0.00738
	B	A	0.00000	0.00000	0.00000
	B	A	0.00152	0.00114	0.00108
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00823	0.00794	0.00796

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	0.00936	0.00896	0.00885
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00229	0.00187	0.00176
	B	A	0.00000	0.00000	0.00000
	B	A	0.00855	0.00839	0.00840
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00284	0.00236	0.00224

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.00795	0.00704	0.33992

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00037	0.00045

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	0.24576	1.38627	8.87497
	A->Y (FR)	B	0.19145	1.50513	13.20590
	B->Y (RR)	!A	0.20577	1.35407	8.86924
	B->Y (FR)	A	0.20939	1.52914	13.22930

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	0.18691	0.92458	6.46757
	A->Y (RF)	B	0.06899	0.71826	7.07607
	B->Y (FF)	!A	0.17490	0.91174	6.41769
	B->Y (RF)	A	0.07952	0.71668	6.88581

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	0.00894	0.00859	0.00860
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00193	0.00124	0.00111
	B	A	0.00000	0.00000	0.00000
	B	A	0.00908	0.00880	0.00880
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00137	0.00097	0.00094

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	0.00194	0.00138	0.00125
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00976	0.00950	0.00952
	B	A	0.00000	0.00000	0.00000
	B	A	0.00194	0.00144	0.00132
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00873	0.00859	0.00861

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
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	0.12273
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	52752.30000	105505.00000
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
	-0.00184	0.00744	0.11311

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
	0.91914	0.86304	0.15631