sky130_osu_sc_15T_ls_tt_1P68_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_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.01552	0.01551	0.01197	1.46562	0.68236	1.40573
sky130_osu_sc_15T_ls__addf_l	0.01550	0.01551	0.01199	0.88938	0.68450	0.90668

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00154	0.00173
sky130_osu_sc_15T_ls__addf_l	0.00000	0.00355	0.00523

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)	0.17419	1.83763	24.43810
	B->CO (RR)	0.15649	1.76808	23.65310
	CI->CO (RR)	0.16559	1.85965	24.91080
	CON->CO (FR)	0.03465	0.86657	12.17380
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.18056	1.70830	19.06180
	B->CO (RR)	0.17319	1.66367	18.75010
	CI->CO (RR)	0.17196	1.73113	19.58090
	CON->CO (FR)	0.04447	0.97945	12.21210

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)	0.27371	2.49201	32.58160
	B->CO (FF)	0.24763	2.37391	31.41910
	CI->CO (FF)	0.24159	2.46060	32.73790
	CON->CO (RF)	0.02495	0.60502	8.50117
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.26359	2.08359	22.78730
	B->CO (FF)	0.23818	1.98810	22.14070
	CI->CO (FF)	0.23164	2.05280	22.96500
	CON->CO (RF)	0.02671	0.59428	7.53881

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)	0.21006	1.18662	11.86860
	B->CON (FR)	0.18598	1.11982	11.60680
	CI->CON (FR)	0.17825	1.15715	12.06260
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.19864	1.17658	11.88160
	B->CON (FR)	0.17522	1.11038	11.61790
	CI->CON (FR)	0.16678	1.14711	12.07440

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)	0.09845	0.64139	6.69252
	B->CON (RF)	0.09438	0.64416	6.89281
	CI->CON (RF)	0.08981	0.66529	7.23587
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.09452	0.63760	6.69893
	B->CON (RF)	0.09068	0.64112	6.90028
	CI->CON (RF)	0.08586	0.66190	7.24361

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)	0.39215	2.38691	26.28440
	B->S (-R)	0.39539	2.36795	25.71990
	CI->S (-R)	0.35767	2.35172	26.42660
	CON->S (RR)	0.09960	0.76033	7.41064
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.37684	2.18641	21.26150
	B->S (-R)	0.38039	2.17923	20.98240
	CI->S (-R)	0.34243	2.15090	21.42490
	CON->S (RR)	0.10282	0.84219	7.33947

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)	0.29395	1.62768	16.92540
	B->S (-F)	0.30576	1.58827	16.53100
	CI->S (-F)	0.28484	1.64590	17.38730
	CON->S (FF)	0.12604	0.75518	6.66464
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.27290	1.43211	13.17450
	B->S (-F)	0.27151	1.38508	13.10880
	CI->S (-F)	0.26376	1.45131	13.67870
	CON->S (FF)	0.11767	0.74205	6.02314

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	0.00331	0.00315	0.00420
	B	0.00421	0.00420	0.00541
	CI	0.00434	0.00450	0.00597
sky130_osu_sc_15T_ls__addf_l	A	0.00258	0.00232	0.00294
	B	0.00348	0.00334	0.00404
	CI	0.00360	0.00364	0.00450

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01116	0.01136	0.01481
	B	0.01169	0.01195	0.01477
	CI	0.01027	0.01066	0.01352
sky130_osu_sc_15T_ls__addf_l	A	0.01120	0.01119	0.01258
	B	0.01099	0.01116	0.01261
	CI	0.00956	0.00987	0.01142

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01189	0.01190	0.01282
	B	0.01168	0.01184	0.01280
	CI	0.01026	0.01058	0.01172
sky130_osu_sc_15T_ls__addf_l	A	0.01120	0.01117	0.01210
	B	0.01098	0.01110	0.01205
	CI	0.00955	0.00985	0.01097

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00328	0.00311	0.00356
	B	0.00418	0.00410	0.00462
	CI	0.00432	0.00443	0.00509
sky130_osu_sc_15T_ls__addf_l	A	0.00256	0.00231	0.00271
	B	0.00345	0.00330	0.00382
	CI	0.00360	0.00363	0.00431

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01116	0.01136	0.01464
	B	0.01169	0.01195	0.01454
	CI	0.01027	0.01066	0.01335
sky130_osu_sc_15T_ls__addf_l	A	0.01121	0.01120	0.01261
	B	0.01100	0.01116	0.01262
	CI	0.00957	0.00988	0.01144

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.02481	0.02495	0.02615
	B	0.02215	0.02167	0.02511
	CI	0.02018	0.02014	0.02153
sky130_osu_sc_15T_ls__addf_l	A	0.02379	0.02382	0.02494
	B	0.02115	0.02065	0.02418
	CI	0.01918	0.01904	0.02058

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	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	0.00763	0.00840	1.43723	0.72936	1.46570
sky130_osu_sc_15T_ls__addh_l	0.00763	0.00841	0.92872	0.73127	0.93453

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00136	0.00153
sky130_osu_sc_15T_ls__addh_l	0.00000	0.00382	0.00500

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)	0.12056	0.77940	7.31035
	B->CO (RR)	0.12439	0.77763	7.39233
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.12557	0.86941	7.34985
	B->CO (RR)	0.12941	0.86899	7.43663

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)	0.10870	0.72691	6.67888
	B->CO (FF)	0.11569	0.74183	6.74033
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.10277	0.68058	5.53638
	B->CO (FF)	0.10941	0.69578	5.60056

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	0.16944	0.64943	3.84124
	A->CON (FR)	!B	0.11708	1.07353	11.94660
	B->CON (RR)	A	0.17319	0.64697	3.91855
	B->CON (FR)	!A	0.14201	1.09802	11.83580
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.15582	0.62927	3.77940
	A->CON (FR)	!B	0.10637	1.06343	11.95440
	B->CON (RR)	A	0.15958	0.62834	3.86193
	B->CON (FR)	!A	0.13128	1.08795	11.84300

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	0.15878	0.77939	5.87347
	A->CON (RF)	!B	0.05889	0.63319	7.33517
	B->CON (FF)	A	0.15853	0.80644	6.13608
	B->CON (RF)	!A	0.07067	0.63231	7.11398
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.14783	0.75963	5.78853
	A->CON (RF)	!B	0.05516	0.62978	7.34102
	B->CON (FF)	A	0.14745	0.78733	6.05530
	B->CON (RF)	!A	0.06700	0.62901	7.11966

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	0.12507	1.77959	24.48750
	A->S (FR)	B	0.22556	1.90573	22.72280
	B->S (RR)	!A	0.13672	1.74154	23.66110
	B->S (FR)	A	0.22622	1.97193	23.60780
	CON->S (FR)	-	0.03733	0.88332	12.38730
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.12738	1.66428	19.73720
	A->S (FR)	B	0.22083	1.77837	17.95030
	B->S (RR)	!A	0.13923	1.63643	19.18350
	B->S (FR)	A	0.22111	1.83342	18.56140
	CON->S (FR)	-	0.04456	0.98582	12.43370

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	0.17049	2.25190	30.83960
	A->S (RF)	B	0.21311	1.46401	16.34210
	B->S (FF)	!A	0.19533	2.28026	30.76610
	B->S (RF)	A	0.21690	1.46103	16.41660
	CON->S (RF)	-	0.02358	0.59361	8.35670
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.16015	1.91888	22.63510
	A->S (RF)	B	0.19994	1.26907	11.52480
	B->S (FF)	!A	0.18499	1.94506	22.54040
	B->S (RF)	A	0.20376	1.26750	11.61040
	CON->S (RF)	-	0.02530	0.59448	7.64880

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	0.00532	0.00505	0.00576
	B	0.00000	0.00000	0.00000
	B	0.00482	0.00452	0.00490
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00462	0.00430	0.00549
	B	0.00000	0.00000	0.00000
	B	0.00412	0.00377	0.00465

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	0.00807	0.00775	0.00867
	B	0.00000	0.00000	0.00000
	B	0.00839	0.00844	0.00942
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00738	0.00705	0.00809
	B	0.00000	0.00000	0.00000
	B	0.00771	0.00770	0.00872

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	0.00531	0.00505	0.00593
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00710	0.00709	0.00739
	B	A	0.00000	0.00000	0.00000
	B	A	0.00481	0.00453	0.00514
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00794	0.00790	0.00803
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00461	0.00429	0.00536
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00662	0.00658	0.00685
	B	A	0.00000	0.00000	0.00000
	B	A	0.00411	0.00377	0.00451
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00746	0.00738	0.00749

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	0.00807	0.00778	0.00896
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00115	0.00111	0.00124
	B	A	0.00000	0.00000	0.00000
	B	A	0.00839	0.00844	0.00949
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00191	0.00180	0.00188
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00739	0.00706	0.00821
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00051	0.00047	0.00056
	B	A	0.00000	0.00000	0.00000
	B	A	0.00771	0.00770	0.00883
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00128	0.00115	0.00122

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	0.00807	0.00776	0.00888
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00116	0.00117	0.00129
	B	A	0.00000	0.00000	0.00000
	B	A	0.00840	0.00845	0.00965
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00193	0.00183	0.00193
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00739	0.00706	0.00803
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00052	0.00049	0.00061
	B	A	0.00000	0.00000	0.00000
	B	A	0.00772	0.00771	0.00872
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00116	0.00123

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	0.00532	0.00505	0.00573
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00710	0.00716	0.00754
	B	A	0.00000	0.00000	0.00000
	B	A	0.00482	0.00452	0.00541
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00795	0.00795	0.00822
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00462	0.00429	0.00532
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00663	0.00662	0.00692
	B	A	0.00000	0.00000	0.00000
	B	A	0.00412	0.00377	0.00453
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00747	0.00740	0.00755

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00410	0.00420	1.45885
sky130_osu_sc_15T_ls__and2_2	0.00410	0.00420	2.85437
sky130_osu_sc_15T_ls__and2_4	0.00410	0.00421	5.49424
sky130_osu_sc_15T_ls__and2_6	0.00413	0.00420	8.13745
sky130_osu_sc_15T_ls__and2_8	0.00411	0.00421	10.49446
sky130_osu_sc_15T_ls__and2_l	0.00311	0.00323	0.88763

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00061	0.00091
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00092	0.00112
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00155	0.00161
sky130_osu_sc_15T_ls__and2_6	0.00000	0.00218	0.00231
sky130_osu_sc_15T_ls__and2_8	0.00000	0.00281	0.00300
sky130_osu_sc_15T_ls__and2_l	0.00000	0.00307	0.00483

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)	0.09223	0.70888	7.06151
	B->Y (RR)	0.09752	0.71695	7.14548
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.10547	0.64836	7.21156
	B->Y (RR)	0.11076	0.64794	7.27349
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.14510	0.66225	7.61264
	B->Y (RR)	0.15022	0.65361	7.66159
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.18349	0.70383	7.96897
	B->Y (RR)	0.18877	0.68690	7.99400
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.22145	0.74697	8.17445
	B->Y (RR)	0.22643	0.72728	8.18440
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.10415	0.80981	6.90464
	B->Y (RR)	0.10963	0.81584	6.97955

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)	0.08279	0.65403	6.25383
	B->Y (FF)	0.08824	0.67221	6.35846
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.09766	0.63871	6.46177
	B->Y (FF)	0.10332	0.65227	6.54345
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.13816	0.67576	6.83447
	B->Y (FF)	0.14334	0.68495	6.90048
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.18068	0.72326	7.15814
	B->Y (FF)	0.18523	0.73005	7.21245
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.22036	0.76230	7.30796
	B->Y (FF)	0.22454	0.77104	7.35229
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.09463	0.68671	5.77021
	B->Y (FF)	0.10268	0.70740	5.86737

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	0.00401	0.00359	0.00798
	B	0.00000	0.00000	0.00000
	B	0.00410	0.00351	0.00622
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00775	0.00760	0.01181
	B	0.00000	0.00000	0.00000
	B	0.00783	0.00765	0.01024
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01593	0.01637	0.02096
	B	0.00000	0.00000	0.00000
	B	0.01601	0.01652	0.01965
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02414	0.02506	0.02954
	B	0.00000	0.00000	0.00000
	B	0.02427	0.02520	0.02834
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03235	0.03356	0.03798
	B	0.00000	0.00000	0.00000
	B	0.03243	0.03373	0.03687
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00290	0.00258	0.00610
	B	0.00000	0.00000	0.00000
	B	0.00297	0.00250	0.00472

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	0.00986	0.00985	0.01421
	B	0.00000	0.00000	0.00000
	B	0.01114	0.01102	0.01501
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01246	0.01302	0.01722
	B	0.00000	0.00000	0.00000
	B	0.01375	0.01415	0.01797
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01881	0.02046	0.02474
	B	0.00000	0.00000	0.00000
	B	0.02019	0.02148	0.02533
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02552	0.02797	0.03254
	B	0.00000	0.00000	0.00000
	B	0.02655	0.02879	0.03290
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03174	0.03511	0.04009
	B	0.00000	0.00000	0.00000
	B	0.03331	0.03575	0.04021
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00749	0.00743	0.01051
	B	0.00000	0.00000	0.00000
	B	0.00840	0.00825	0.01111

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)	-0.00360	-0.00362	-0.00363
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00360	-0.00362	-0.00363
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00360	-0.00362	-0.00363
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00362	-0.00364	-0.00365
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00360	-0.00361	-0.00363
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00256	-0.00257	-0.00258

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)	0.00362	0.00371	0.00364
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00362	0.00363	0.00364
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00362	0.00371	0.00364
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00364	0.00373	0.00366
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00362	0.00370	0.00364
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00257	0.00259	0.00259

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)	-0.00342	-0.00344	-0.00342
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00342	-0.00343	-0.00342
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00342	-0.00344	-0.00342
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00342	-0.00344	-0.00342
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00342	-0.00342	-0.00342
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00243	-0.00246	-0.00244

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)	0.00344	0.00349	0.00343
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00344	0.00343	0.00343
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00345	0.00344	0.00343
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00344	0.00344	0.00343
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00345	0.00344	0.00343
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00246	0.00249	0.00245

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00385	0.00402	0.00391	0.66872

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00037	0.00052

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)	0.11075	1.09912	11.83350
	A1->Y (FR)	0.09278	1.04106	11.44400
	B0->Y (FR)	0.08237	1.07177	12.03020

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)	0.05301	0.57575	6.38645
	A1->Y (RF)	0.04815	0.59216	6.77308
	B0->Y (RF)	0.03168	0.55113	6.49142

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	0.00860	0.00850	0.00857
	A1	0.00000	0.00000	0.00000
	A1	0.00724	0.00711	0.00715
	B0	0.00676	0.00660	0.00709

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	0.00163	0.00131	0.00144
	A1	0.00000	0.00000	0.00000
	A1	0.00166	0.00136	0.00161
	B0	-0.00080	-0.00086	-0.00056

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)	-0.00296	-0.00312	-0.00311
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00316	-0.00319	-0.00317
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00317	-0.00318	-0.00317

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)	0.00310	0.00313	0.00311
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00316	0.00322	0.00318
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00319	0.00322	0.00318

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)	-0.00292	-0.00308	-0.00306
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00311	-0.00313	-0.00312
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00337	-0.00341	-0.00341

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)	0.00305	0.00308	0.00306
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00312	0.00314	0.00313
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00340	0.00343	0.00342

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)	-0.00146	-0.00146	-0.00147

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)	0.00161	0.00162	0.00151

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_1	0.00384	0.00400	0.00416	0.00396	0.68733

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_1	0.00000	0.00043	0.00070

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)	0.13646	1.12634	11.91100
	A1->Y (FR)	0.12152	1.10041	11.80170
	B0->Y (FR)	0.08493	1.06014	11.96450
	B1->Y (FR)	0.10018	1.08919	12.11520

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)	0.06956	0.59903	6.50445
	A1->Y (RF)	0.06462	0.61638	6.89604
	B0->Y (RF)	0.03713	0.58406	6.86204
	B1->Y (RF)	0.04200	0.56582	6.47308

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	0.01048	0.01038	0.01043
	A1	0.00913	0.00898	0.00904
	B0	0.00726	0.00704	0.00749
	B1	0.00855	0.00836	0.00886

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00344	0.00313	0.00321
	A1	0.00347	0.00314	0.00337
	B0	-0.00046	-0.00056	-0.00026
	B1	-0.00039	-0.00053	-0.00038

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)	-0.00298	-0.00312	-0.00311
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00317	-0.00319	-0.00317
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00316	-0.00319	-0.00317
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00316	-0.00319	-0.00317

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)	0.00310	0.00314	0.00311
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00317	0.00320	0.00318
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00319	0.00322	0.00318
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00319	0.00322	0.00318

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)	-0.00293	-0.00307	-0.00306
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00311	-0.00312	-0.00312
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00336	-0.00340	-0.00340
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00336	-0.00340	-0.00340

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)	0.00305	0.00307	0.00306
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00312	0.00314	0.00313
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00340	0.00342	0.00341
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00339	0.00342	0.00341

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)	-0.00147	-0.00148	-0.00148
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00147	-0.00148	-0.00147
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00350	-0.00350	-0.00352
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00349	-0.00350	-0.00352

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)	0.00169	0.00169	0.00153
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00147	0.00148	0.00147
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00352	0.00355	0.00353
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00352	0.00355	0.00353

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)	-0.00148	-0.00152	-0.00149
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00148	-0.00149	-0.00148
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00323	-0.00324	-0.00324
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00323	-0.00325	-0.00324

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)	0.00170	0.00170	0.00154
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00148	0.00149	0.00148
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00326	0.00330	0.00324
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00326	0.00330	0.00324

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00420	1.43879
sky130_osu_sc_15T_ls__buf_2	0.00423	2.83644
sky130_osu_sc_15T_ls__buf_4	0.00423	5.54543
sky130_osu_sc_15T_ls__buf_6	0.00092	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00423	10.61674
sky130_osu_sc_15T_ls__buf_l	0.00325	0.89077

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00056	0.00056
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00084	0.00091
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00140	0.00161
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.00253	0.00300
sky130_osu_sc_15T_ls__buf_l	0.00000	0.00257	0.00257

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)**	0.06967	0.67411	6.98247
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.07865	0.60407	7.10055
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.10625	0.60243	7.52996
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.15958	0.65922	7.98654
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.08026	0.76947	6.80163

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)**	0.07823	0.64109	6.16330
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.09488	0.64229	6.62952
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.13575	0.68301	7.13711
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.21827	0.77250	7.65598
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.09084	0.67934	5.73161

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	0.00375	0.00321	0.00701
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00746	0.00708	0.01072
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01570	0.01590	0.01916
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03199	0.03326	0.03755
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00280	0.00236	0.00554

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	0.00954	0.00946	0.01369
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01220	0.01255	0.01644
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01860	0.01995	0.02392
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03154	0.03437	0.03895
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00732	0.00714	0.01018

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
	-0.00061	-0.00062	-0.00061

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
	0.00061	0.00062	0.00061

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00396	0.00396	0.01173	1.35571	1.35042
sky130_osu_sc_15T_ls__dffr_l	0.00396	0.00396	0.01173	0.88991	0.89191

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.00458	0.00632
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.00658	0.00833

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)	0.41352	1.59163	14.86030
	QN->Q (FR)	0.04275	0.98984	13.65410
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.39992	1.67620	13.93760
	QN->Q (FR)	0.04864	1.05811	13.17270

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)	0.37247	1.60764	15.87510
	QN->Q (RF)	0.02803	0.66163	9.14351
	RN->Q (FF)	0.27007	1.66136	17.86480
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.38099	1.74497	15.12720
	QN->Q (RF)	0.02861	0.64815	8.24096
	RN->Q (FF)	0.27971	1.79829	17.10520

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)	0.33105	0.97303	7.31797
	RN->QN (FR)	0.22847	1.02766	9.30429
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.33499	1.06458	7.35802
	RN->QN (FR)	0.23346	1.11819	9.33522

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)**	0.34985	0.81160	4.40812
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.32853	0.79309	3.89052

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)	-0.08034	-0.10396	-0.37195
	setup	CK (R)	0.32553	0.35070	1.54411
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08107	-0.10414	-0.37237
	setup	CK (R)	0.32575	0.35313	1.57170

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)	-0.15354	-0.45565	-4.27773
	setup	CK (R)	0.18708	0.47036	4.38866
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.15664	-0.45588	-4.27352
	setup	CK (R)	0.18708	0.47036	4.38857

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)	-0.08034	-0.10396	-0.37195
	setup	CK (R)	0.32553	0.35070	1.54411
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08107	-0.10414	-0.37237
	setup	CK (R)	0.32575	0.35313	1.57170

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)	-0.15354	-0.45565	-4.27773
	setup	CK (R)	0.18708	0.47036	4.38866
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.15664	-0.45588	-4.27352
	setup	CK (R)	0.18708	0.47036	4.38857

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)	0.28053	0.30796	1.51992
	removal	CK (R)	-0.06376	-0.07434	-0.14810
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.28173	0.31026	1.54668
	removal	CK (R)	-0.06376	-0.07434	-0.14511

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)	0.28053	0.30796	1.51992
	removal	CK (R)	-0.06376	-0.07434	-0.14810
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.28173	0.31026	1.54668
	removal	CK (R)	-0.06376	-0.07434	-0.14511

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 ()	0.16225	0.49072	13.33370
	min_pulse_width	RN ()	0.15856	0.49072	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.15856	0.49072	13.33370
	min_pulse_width	RN ()	0.15856	0.49072	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 ()	0.19177	0.49072	13.33370
	min_pulse_width	CK ()	0.19177	0.49072	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.17701	0.49072	13.33370
	min_pulse_width	CK ()	0.18808	0.49072	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 ()	0.40880	0.50834	13.33370
	min_pulse_width	CK ()	0.15118	0.49072	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.40845	0.51274	13.33370
	min_pulse_width	CK ()	0.15118	0.49072	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	0.00938	0.00718	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00823	0.00655	-0.00056

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	0.01096	0.00917	0.00000
	RN	-0.00128	-0.06779	-0.95659
	RN	0.02501	0.02337	0.00662
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00976	0.00862	0.00242
	RN	-0.00128	-0.05266	-0.62792
	RN	0.02383	0.02279	0.01631

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	0.01096	0.00917	0.00000
	RN	-0.00128	-0.06763	-0.95286
	RN	0.02501	0.02337	0.00671
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00977	0.00862	0.00228
	RN	-0.00128	-0.05273	-0.62933
	RN	0.02383	0.02280	0.01639

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	0.00935	0.00717	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00819	0.00651	-0.00110

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	-0.00278	-0.00308	-0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01147	0.01079	0.01281
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00494	0.00433	0.00645
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00308	-0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01146	0.01079	0.01281
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00494	0.00433	0.00645

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	0.00307	0.00311	0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01893	0.01856	0.02029
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00904	0.00878	0.01063
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00307	0.00311	0.00309
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01893	0.01856	0.02029
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00904	0.00878	0.01063

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)	0.00356	0.00295	0.00700
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01045	0.00956	0.01342
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)	0.00356	0.00295	0.00700
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01045	0.00956	0.01342

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)	0.00899	0.00866	0.01317
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01878	0.01816	0.02227
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)	0.00899	0.00866	0.01317
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01877	0.01815	0.02227

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)	-0.00067	-0.00140	0.00255
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00571	0.00431	0.00818
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00101	-0.00177	0.00224
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00067	-0.00140	0.00255
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00571	0.00431	0.00818
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00101	-0.00177	0.00224

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)	0.01386	0.01352	0.01794
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02961	0.02859	0.03217
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02251	0.02192	0.02561
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02901	0.02817	0.03663
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01564	0.01528	0.01944
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01386	0.01352	0.01794
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02961	0.02859	0.03216
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02251	0.02192	0.02561
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02901	0.02817	0.03663
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01564	0.01528	0.01944

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00392	0.00397	0.00870	0.01194	1.47389	1.47079
sky130_osu_sc_15T_ls__dffsr_l	0.00392	0.00397	0.00869	0.01194	0.89435	0.88978

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.00257	0.00321
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.00458	0.00521

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)	0.39652	1.59388	15.60170
	QN->Q (FR)	0.03776	0.92647	13.05060
	RN->Q (RR)	0.31947	1.53106	15.65690
	SN->Q (FR)	0.29786	1.65940	17.99920
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.39573	1.68098	14.04400
	QN->Q (FR)	0.04868	1.05848	13.19180
	RN->Q (RR)	0.31829	1.61870	14.09120
	SN->Q (FR)	0.29747	1.74518	16.40540

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)	0.42604	1.66664	16.45210
	QN->Q (RF)	0.02774	0.68027	9.57895
	RN->Q (FF)	0.28281	1.68337	18.47010
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.44108	1.81241	15.26940
	QN->Q (RF)	0.02855	0.64849	8.25397
	RN->Q (FF)	0.29842	1.82984	17.27690

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)	0.38471	1.01989	7.41958
	RN->QN (FR)	0.24254	1.03638	9.43395
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.39426	1.12869	7.41485
	RN->QN (FR)	0.25207	1.14539	9.42066

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)	0.33941	0.82049	4.82319
	RN->QN (RF)	0.26277	0.75963	4.87648
	SN->QN (FF)	0.24133	0.88655	7.21648
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.32806	0.79775	3.93040
	RN->QN (RF)	0.25189	0.73764	3.97883
	SN->QN (FF)	0.23037	0.86272	6.28912

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)	-0.08364	-0.10886	-0.44427
	setup	CK (R)	0.29973	0.32453	1.57656
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.08381	-0.11089	-0.44417
	setup	CK (R)	0.30132	0.32452	1.57749

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)	-0.17908	-0.48021	-4.46344
	setup	CK (R)	0.22283	0.49361	4.55171
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.18015	-0.47772	-4.46171
	setup	CK (R)	0.22283	0.49361	4.55121

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)	-0.08364	-0.10886	-0.44427
	setup	CK (R)	0.29973	0.32453	1.57656
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.08381	-0.11089	-0.44417
	setup	CK (R)	0.30132	0.32452	1.57749

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)	-0.17908	-0.48021	-4.46344
	setup	CK (R)	0.22283	0.49361	4.55171
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.18015	-0.47772	-4.46171
	setup	CK (R)	0.22283	0.49361	4.55121

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)	0.23307	0.25640	1.43020
	removal	CK (R)	-0.02938	-0.03600	-0.08972
	hold	SN (R)	-0.23568	-0.44131	-2.33291
	setup	SN (R)	0.26206	0.48626	5.77123
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.23402	0.25609	1.44008
	removal	CK (R)	-0.02938	-0.03600	-0.08972
	hold	SN (R)	-0.22693	-0.42972	-2.26000
	setup	SN (R)	0.26257	0.47259	5.69597

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)	0.23307	0.25640	1.43020
	removal	CK (R)	-0.02938	-0.03600	-0.08972
	hold	SN (R)	-0.23568	-0.44131	-2.33291
	hold	SN (R)	-0.23857	-0.44362	-2.34748
	setup	SN (R)	0.26206	0.48517	5.53034
	setup	SN (R)	0.25941	0.48626	5.77123
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.23402	0.25609	1.44008
	removal	CK (R)	-0.02938	-0.03600	-0.08972
	hold	SN (R)	-0.23055	-0.42972	-2.26000
	hold	SN (R)	-0.22693	-0.43042	-2.26883
	setup	SN (R)	0.26257	0.46860	5.39280
	setup	SN (R)	0.24774	0.47259	5.69597

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 ()	0.18439	0.49072	13.33370
	min_pulse_width	RN ()	0.18808	0.49072	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.18439	0.49072	13.33370
	min_pulse_width	RN ()	0.18439	0.49072	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)	0.05016	0.08824	4.67371
	removal	CK (R)	-0.01970	-0.06542	-0.43561
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04842	0.08963	4.55025
	removal	CK (R)	-0.01886	-0.06542	-0.43561

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)	0.05016	0.08824	4.67371
	removal	CK (R)	-0.01970	-0.06542	-0.43561
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04842	0.08963	4.55025
	removal	CK (R)	-0.01886	-0.06542	-0.43561

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 ()	0.23751	0.51054	13.33370
	min_pulse_width	SN ()	0.24135	0.51054	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.23809	0.49513	13.33370
	min_pulse_width	SN ()	0.22788	0.49733	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 ()	0.17701	0.49072	13.33370
	min_pulse_width	CK ()	0.21761	0.49072	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.16963	0.49072	13.33370
	min_pulse_width	CK ()	0.21392	0.49072	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 ()	0.38369	0.49072	13.33370
	min_pulse_width	CK ()	0.19177	0.49072	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.38369	0.49072	13.33370
	min_pulse_width	CK ()	0.18808	0.49072	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	0.01176	0.00945	-0.00164
	RN	0.02188	0.01986	-0.00409
	SN	-0.00128	-0.07128	-1.03998
	SN	0.02424	0.02222	-0.00257
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01073	0.00909	0.00183
	RN	0.02083	0.01947	0.00984
	SN	-0.00128	-0.05282	-0.63105
	SN	0.02319	0.02186	0.01125

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	0.01261	0.01152	0.00164
	RN	-0.00128	-0.07128	-1.03998
	RN	0.02600	0.02489	0.01516
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01153	0.01045	0.00435
	RN	-0.00128	-0.05282	-0.63105
	RN	0.02488	0.02382	0.01755

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	0.01261	0.01151	0.00163
	RN	-0.00128	-0.07119	-1.03779
	RN	0.02600	0.02489	0.01501
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01153	0.01046	0.00429
	RN	-0.00128	-0.05266	-0.62783
	RN	0.02489	0.02383	0.01757

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	0.01173	0.00944	-0.00163
	RN	0.02185	0.01985	-0.00352
	SN	-0.00128	-0.07119	-1.03772
	SN	0.02421	0.02220	-0.00195
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01069	0.00910	0.00158
	RN	0.02080	0.01943	0.00970
	SN	-0.00128	-0.05266	-0.62778
	SN	0.02316	0.02183	0.01124

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	-0.00299	-0.00309	-0.00309
	(!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)	0.01490	0.01427	0.01625
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00563	0.00506	0.00712
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00561	0.00504	0.00709
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00568	0.00510	0.00717
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00299	-0.00309	-0.00309
	(!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)	0.01490	0.01427	0.01625
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00563	0.00506	0.00712
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00561	0.00504	0.00709
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00568	0.00510	0.00717

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	0.00310	0.00310	0.00309
	(!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)	0.02169	0.02135	0.02275
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00971	0.00948	0.01124
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00973	0.00950	0.01125
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00966	0.00943	0.01119
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00310	0.00310	0.00309
	(!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)	0.02168	0.02134	0.02274
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00970	0.00947	0.01123
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00972	0.00949	0.01124
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00965	0.00942	0.01118

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)	0.00308	0.00245	0.00637
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01267	0.01177	0.01554
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)	0.00308	0.00246	0.00637
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01268	0.01179	0.01554

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)	0.00981	0.00949	0.01405
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02002	0.01931	0.02339
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)	0.00979	0.00948	0.01404
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02001	0.01929	0.02338

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)	-0.00711	-0.00719	-0.00719
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00743	-0.00759	-0.00758
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00712	-0.00724	-0.00721
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00444	0.00378	0.00636
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)	-0.00711	-0.00719	-0.00719
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00741	-0.00757	-0.00755
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00711	-0.00723	-0.00720
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00445	0.00379	0.00637

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)	0.00718	0.00723	0.00721
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00755	0.00761	0.00758
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00718	0.00724	0.00722
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01545	0.01507	0.01650
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)	0.00718	0.00723	0.00721
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00754	0.00759	0.00755
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00717	0.00723	0.00722
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01543	0.01506	0.01650

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)	-0.00067	-0.00141	0.00251
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00656	0.00520	0.00908
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00650	0.00516	0.00902
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00083	-0.00157	0.00240
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00417	0.00273	0.01069
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00067	-0.00141	0.00251
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00655	0.00519	0.00907
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00649	0.00515	0.00901
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00083	-0.00157	0.00240
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00417	0.00273	0.01069

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)	0.03316	0.03227	0.03574
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01391	0.01357	0.01799
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02296	0.02244	0.02612
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02304	0.02247	0.02617
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03169	0.03069	0.03891
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01550	0.01514	0.01931
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01864	0.01796	0.02664
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03316	0.03227	0.03574
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01391	0.01357	0.01799
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02296	0.02244	0.02612
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02304	0.02247	0.02617
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03168	0.03068	0.03890
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01550	0.01514	0.01931
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01863	0.01795	0.02664

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00395	0.00695	0.01171	1.35913	1.35297
sky130_osu_sc_15T_ls__dffs_l	0.00395	0.00695	0.01171	0.89503	0.89248

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.00491	0.01066
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.00692	0.01266

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)	0.30478	1.46494	14.74420
	QN->Q (FR)	0.04279	0.98740	13.61390
	SN->Q (FR)	0.24579	1.61493	17.28980
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.30157	1.56587	13.88470
	QN->Q (FR)	0.04863	1.05696	13.17670
	SN->Q (FR)	0.24183	1.71105	16.38150

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)	0.41282	1.65100	15.90990
	QN->Q (RF)	0.02788	0.65932	9.12421
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.41903	1.78825	15.22230
	QN->Q (RF)	0.02849	0.64689	8.24291

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)	0.36993	1.01740	7.34912
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.37204	1.10461	7.38463

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)	0.24825	0.68937	4.29289
	SN->QN (FF)	0.18862	0.84081	6.83658
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.23711	0.68394	3.78045
	SN->QN (FF)	0.17681	0.82987	6.27316

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)	-0.06295	-0.08972	-0.35262
	setup	CK (R)	0.22077	0.25788	1.57484
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.06107	-0.08806	-0.35187
	setup	CK (R)	0.22284	0.25808	1.58956

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)	-0.15918	-0.45563	-4.26529
	setup	CK (R)	0.20564	0.47180	4.41741
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.16129	-0.45687	-4.25724
	setup	CK (R)	0.20538	0.47180	4.41730

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)	-0.06295	-0.08972	-0.35262
	setup	CK (R)	0.22077	0.25788	1.57484
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.06107	-0.08806	-0.35187
	setup	CK (R)	0.22284	0.25808	1.58956

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)	-0.15918	-0.45563	-4.26529
	setup	CK (R)	0.20564	0.47180	4.41741
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.16129	-0.45687	-4.25724
	setup	CK (R)	0.20538	0.47180	4.41730

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)	0.05383	0.08276	3.65819
	removal	CK (R)	-0.01862	-0.05520	-0.27298
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.05324	0.08265	3.48644
	removal	CK (R)	-0.01862	-0.05520	-0.27298

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)	0.05383	0.08276	3.65819
	removal	CK (R)	-0.01862	-0.05520	-0.27298
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.05324	0.08265	3.48644
	removal	CK (R)	-0.01862	-0.05520	-0.27298

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 ()	0.17365	0.52815	13.33370
	min_pulse_width	SN ()	0.18162	0.52815	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.17144	0.50834	13.33370
	min_pulse_width	SN ()	0.16829	0.51054	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 ()	0.12903	0.49072	13.33370
	min_pulse_width	CK ()	0.20285	0.49072	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.12165	0.49072	13.33370
	min_pulse_width	CK ()	0.19916	0.49072	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 ()	0.30619	0.49072	13.33370
	min_pulse_width	CK ()	0.17332	0.49072	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.30619	0.49072	13.33370
	min_pulse_width	CK ()	0.17332	0.49072	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	0.00938	0.00715	0.00000
	SN	-0.00128	-0.06789	-0.95900
	SN	0.02050	0.01845	-0.00182
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00822	0.00652	-0.00044
	SN	-0.00128	-0.05284	-0.63153
	SN	0.01934	0.01784	0.00894

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	0.01091	0.00919	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00975	0.00864	0.00262

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	0.01091	0.00921	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00975	0.00864	0.00254

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	0.00936	0.00713	0.00000
	SN	-0.00128	-0.06771	-0.95458
	SN	0.02048	0.01846	-0.00130
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00819	0.00651	-0.00091
	SN	-0.00128	-0.05275	-0.62969
	SN	0.01931	0.01780	0.00882

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	-0.00304	-0.00314	-0.00314
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01111	0.01040	0.01240
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00484	0.00424	0.00636
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00304	-0.00314	-0.00314
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01111	0.01040	0.01240
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00484	0.00424	0.00636

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	0.00315	0.00317	0.00314
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01870	0.01831	0.01994
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00926	0.00901	0.01085
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00315	0.00317	0.00314
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01870	0.01831	0.01994
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00926	0.00901	0.01085

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)	-0.00517	-0.00521	-0.00521
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00393	0.00340	0.00625
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)	-0.00518	-0.00521	-0.00521
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00393	0.00339	0.00625

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)	0.00523	0.00527	0.00522
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01067	0.01030	0.01293
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)	0.00523	0.00527	0.00522
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01067	0.01030	0.01293

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)	-0.00069	-0.00143	0.00253
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00096	-0.00172	0.00229
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00333	0.00189	0.01002
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00069	-0.00143	0.00253
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00096	-0.00172	0.00229
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00333	0.00189	0.01002

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)	0.02932	0.02833	0.03192
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01388	0.01354	0.01796
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02866	0.02765	0.03606
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01558	0.01523	0.01939
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01812	0.01746	0.02629
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02932	0.02833	0.03192
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01388	0.01354	0.01796
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02866	0.02766	0.03606
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01558	0.01523	0.01939
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01812	0.01744	0.02629

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
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	0.00410	0.01165	1.48981	1.47666
sky130_osu_sc_15T_ls__dff_l	0.00410	0.01164	0.82148	0.82764

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00216	0.00232
sky130_osu_sc_15T_ls__dff_l	0.00000	0.00417	0.00432

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)	0.24834	1.42754	15.53800
	QN->Q (FR)	0.03751	0.92547	13.09490
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.25757	1.50332	13.18590
	QN->Q (FR)	0.05413	1.11839	13.61320

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)	0.35732	1.59577	16.50780
	QN->Q (RF)	0.02763	0.68049	9.61276
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.37867	1.73860	14.61700
	QN->Q (RF)	0.02859	0.63053	7.90767

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)	0.31735	0.94507	7.34356
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.33194	1.07567	7.31842

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)	0.19811	0.65055	4.63482
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.19388	0.62451	3.47790

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)	-0.05588	-0.08274	-0.36899
	setup	CK (R)	0.16397	0.20827	1.59211
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.05831	-0.08674	-0.36673
	setup	CK (R)	0.16362	0.20653	1.59088

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)	-0.15149	-0.46058	-4.27167
	setup	CK (R)	0.18303	0.47591	4.47759
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.15158	-0.46058	-4.27796
	setup	CK (R)	0.18242	0.47591	4.48150

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 ()	0.10320	0.49072	13.33370
	min_pulse_width	CK ()	0.19177	0.49072	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.09951	0.49072	13.33370
	min_pulse_width	CK ()	0.18439	0.49072	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 ()**	0.24713	0.49072	13.33370
	min_pulse_width	**CK ()**	0.14380	0.49072	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.24713	0.49072	13.33370
	min_pulse_width	**CK ()**	0.14380	0.49072	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	0.00994	0.00746	-0.00027
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00891	0.00720	0.00117

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	0.01109	0.00997	0.00027
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00999	0.00853	-0.00085

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	0.01109	0.01000	0.00046
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01000	0.00853	-0.00073

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	0.00991	0.00745	-0.00046
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00888	0.00716	0.00073

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	-0.00278	-0.00308	-0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01037	0.00974	0.01183
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00278	-0.00308	-0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01037	0.00974	0.01183

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	0.00306	0.00310	0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01935	0.01897	0.02063
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00306	0.00310	0.00308
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01935	0.01898	0.02063

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)	-0.00069	-0.00143	0.00254
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00170	0.00230
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00069	-0.00143	0.00254
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00169	0.00230

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)	0.01380	0.01345	0.01789
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02858	0.02766	0.03142
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02909	0.02806	0.03658
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01549	0.01513	0.01930
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01380	0.01344	0.01789
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02858	0.02767	0.03142
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02910	0.02807	0.03659
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01549	0.01513	0.01930

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00401	1.41672
sky130_osu_sc_15T_ls__inv_10	0.03706	13.18140
sky130_osu_sc_15T_ls__inv_2	0.00760	2.82699
sky130_osu_sc_15T_ls__inv_3	0.01131	4.08593
sky130_osu_sc_15T_ls__inv_4	0.01494	5.50113
sky130_osu_sc_15T_ls__inv_6	0.02238	8.11562
sky130_osu_sc_15T_ls__inv_8	0.02973	10.65061
sky130_osu_sc_15T_ls__inv_l	0.00301	0.82495

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00028	0.00035
sky130_osu_sc_15T_ls__inv_10	0.00000	0.00281	0.00348
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00056	0.00070
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00084	0.00105
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00112	0.00139
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00168	0.00209
sky130_osu_sc_15T_ls__inv_8	0.00000	0.00224	0.00279
sky130_osu_sc_15T_ls__inv_l	0.00000	0.00128	0.00226

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)**	0.03614	0.87013	12.12850
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.04901	0.60138	12.14210
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.02879	0.74881	12.09260
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.03145	0.70346	12.12450
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.03191	0.66850	12.10750
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.03588	0.63153	12.10260
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.04196	0.61110	12.06850
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.04773	0.99193	12.16780

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)**	0.02465	0.59879	8.35686
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.03586	0.39963	8.41091
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.02033	0.51989	8.38845
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.02218	0.49022	8.47493
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.02208	0.46291	8.46382
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02677	0.43136	8.46613
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.03127	0.41333	8.43772
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.02622	0.58076	7.23548

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	0.00496	0.00495	0.00542
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04197	0.04355	0.04857
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00878	0.00877	0.00992
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01346	0.01366	0.01518
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01728	0.01769	0.01967
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02557	0.02610	0.02941
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03381	0.03476	0.03904
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00371	0.00363	0.00399

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	-0.00095	-0.00098	-0.00074
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01649	-0.01580	-0.01115
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00305	-0.00299	-0.00238
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00407	-0.00384	-0.00296
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00629	-0.00610	-0.00462
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00960	-0.00930	-0.00686
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01310	-0.01260	-0.00901
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00061	-0.00066	-0.00042

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.23000	0.22992	0.00820	0.22696

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00079	0.00102

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)	-	0.01846	0.33738	3.40385
	A1->Y (RR)	-	0.02084	0.33961	3.41112
	S0->Y (RR)	(!A0 * A1)	0.05641	0.32265	0.98128
	S0->Y (FR)	(A0 * !A1)	0.04537	0.47938	3.82326

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)	-	0.01845	0.30376	2.90661
	A1->Y (FF)	-	0.01695	0.30121	2.89942
	S0->Y (FF)	(!A0 * A1)	0.08049	0.45050	2.70977
	S0->Y (RF)	(A0 * !A1)	0.02798	0.33096	2.29447

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	-	-0.00505	-0.00506	-0.00506
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00345	-0.00345	-0.00345
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00605	0.00589	0.01089
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00332	-0.00394	0.00057

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	-	0.00505	0.00506	0.00506
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00345	0.00345	0.00345
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00100	0.00042	0.00512
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01332	0.01309	0.01769

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)	-0.00128	-0.00127	-0.00127

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)	0.00128	0.00127	0.00127

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)	-0.00152	-0.00152	-0.00152

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)	0.00152	0.00152	0.00152

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)	-0.00119	-0.00176	0.00284
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00114	-0.00173	0.00283

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)	0.01014	0.00997	0.01456
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00922	0.00910	0.01398

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00401	0.00398	1.40424
sky130_osu_sc_15T_ls__nand2_l	0.00301	0.00301	0.82060

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00030	0.00070
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.00129	0.00452

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)	0.03781	0.87182	12.13000
	B->Y (FR)	0.04457	0.86844	11.96070
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.04946	0.99780	12.16700
	B->Y (FR)	0.05903	1.00480	12.14540

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)	0.03612	0.75366	10.45960
	B->Y (RF)	0.04112	0.73904	10.12790
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.03864	0.73705	8.95797
	B->Y (RF)	0.04308	0.71775	8.55804

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	0.00528	0.00524	0.00571
	B	0.00000	0.00000	0.00000
	B	0.00665	0.00655	0.00699
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00391	0.00384	0.00416
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00478	0.00510

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	-0.00056	-0.00066	-0.00042
	B	0.00000	0.00000	0.00000
	B	-0.00052	-0.00063	-0.00048
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00038	-0.00044	-0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00036	-0.00044	-0.00031

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)	-0.00352	-0.00354	-0.00355
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00246	-0.00247	-0.00248

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)	0.00354	0.00363	0.00356
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00247	0.00253	0.00248

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)	-0.00328	-0.00330	-0.00328
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00229	-0.00230	-0.00229

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)	0.00330	0.00331	0.00329
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00231	0.00234	0.00230

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00397	0.00427	0.72651
sky130_osu_sc_15T_ls__nor2_l	0.00290	0.00323	0.45499

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00030	0.00043
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.00132	0.00226

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)	0.08087	1.04320	11.82710
	B->Y (FR)	0.06335	1.02426	11.93700
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.09836	1.18600	11.80770
	B->Y (FR)	0.08286	1.17699	12.05040

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)	0.03265	0.50338	5.93528
	B->Y (RF)	0.02615	0.49186	5.91648
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.03242	0.49426	5.26674
	B->Y (RF)	0.02757	0.48499	5.25050

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	0.00705	0.00695	0.00707
	B	0.00000	0.00000	0.00000
	B	0.00542	0.00529	0.00580
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00498	0.00489	0.00501
	B	0.00000	0.00000	0.00000
	B	0.00399	0.00387	0.00428

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	0.00066	0.00039	0.00070
	B	0.00000	0.00000	0.00000
	B	-0.00075	-0.00078	-0.00049
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00041	0.00025	0.00059
	B	0.00000	0.00000	0.00000
	B	-0.00045	-0.00047	-0.00017

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)	-0.00281	-0.00311	-0.00310
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00190	-0.00209	-0.00208

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)	0.00308	0.00311	0.00310
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00207	0.00210	0.00208

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)	-0.00147	-0.00148	-0.00148
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00101	-0.00103	-0.00101

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)	0.00155	0.00156	0.00151
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00105	0.00106	0.00102

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00401	0.00408	0.00341	0.72099

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00108	0.00261

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)	0.08910	1.06395	12.09150
	A1->Y (FR)	0.11128	1.08939	11.99600
	B0->Y (FR)	0.05810	0.92016	10.90500

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)	0.04956	0.60757	6.91135
	A1->Y (RF)	0.05817	0.60295	6.78085
	B0->Y (RF)	0.03888	0.63390	7.54527

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	0.00737	0.00718	0.00768
	A1	0.00000	0.00000	0.00000
	A1	0.00903	0.00888	0.00899
	B0	0.00606	0.00573	0.00621

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	0.00024	0.00012	0.00025
	A1	0.00000	0.00000	0.00000
	A1	0.00166	0.00137	0.00151
	B0	0.00233	0.00221	0.00243

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)	-0.00148	-0.00152	-0.00149
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00303	-0.00313	-0.00312
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00318	-0.00321	-0.00319

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)	0.00157	0.00158	0.00151
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00311	0.00313	0.00312
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00318	0.00321	0.00320

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)	-0.00273	-0.00306	-0.00303
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00299	-0.00308	-0.00309
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00314	-0.00316	-0.00315

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)	0.00302	0.00307	0.00303
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00307	0.00308	0.00309
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00315	0.00319	0.00316

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)	-0.00252	-0.00254	-0.00257

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)	0.00257	0.00259	0.00258

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00386	0.00411	0.00423	0.00412	0.72412

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00046	0.00070

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)	0.12149	1.08613	11.85330
	A1->Y (FR)	0.10340	1.06527	11.96720
	B0->Y (FR)	0.07059	1.03198	11.94350
	B1->Y (FR)	0.09018	1.05280	11.83600

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)	0.08168	0.64995	7.00290
	A1->Y (RF)	0.06620	0.62947	6.94983
	B0->Y (RF)	0.05599	0.65442	7.58554
	B1->Y (RF)	0.07218	0.67868	7.67646

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	0.01173	0.01159	0.01169
	A1	0.01004	0.00984	0.01024
	B0	0.00742	0.00727	0.00768
	B1	0.00918	0.00905	0.00914

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00267	0.00241	0.00250
	A1	0.00139	0.00124	0.00131
	B0	0.00139	0.00125	0.00147
	B1	0.00270	0.00243	0.00265

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)	-0.00280	-0.00311	-0.00310
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00280	-0.00311	-0.00310
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00301	-0.00312	-0.00310
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00315	-0.00317	-0.00316

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)	0.00309	0.00311	0.00310
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00309	0.00311	0.00310
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00309	0.00312	0.00310
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00316	0.00318	0.00317

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)	-0.00146	-0.00146	-0.00147
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00146	-0.00146	-0.00147
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00298	-0.00308	-0.00307
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00313	-0.00316	-0.00314

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)	0.00154	0.00155	0.00149
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00154	0.00155	0.00149
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00306	0.00308	0.00307
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00313	0.00316	0.00315

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)	-0.00145	-0.00146	-0.00146
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00145	-0.00146	-0.00146
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00334	-0.00344	-0.00343
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00341	-0.00345	-0.00349

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)	0.00153	0.00154	0.00148
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00153	0.00154	0.00148
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00343	0.00344	0.00343
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00349	0.00352	0.00351

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)	-0.00275	-0.00304	-0.00304
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00275	-0.00306	-0.00304
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00342	-0.00354	-0.00352
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00349	-0.00351	-0.00356

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)	0.00303	0.00304	0.00304
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00303	0.00306	0.00304
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00352	0.00354	0.00352
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00356	0.00358	0.00358

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00433	0.00410	1.43012
sky130_osu_sc_15T_ls__or2_2	0.00433	0.00410	2.84155
sky130_osu_sc_15T_ls__or2_4	0.00433	0.00411	5.49150
sky130_osu_sc_15T_ls__or2_8	0.00432	0.00411	10.50487
sky130_osu_sc_15T_ls__or2_l	0.00331	0.00306	0.82689

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00055	0.00078
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00080	0.00112
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00129	0.00182
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00228	0.00321
sky130_osu_sc_15T_ls__or2_l	0.00000	0.00212	0.00288

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)	0.08265	0.71222	7.08647
	B->Y (RR)	0.07383	0.68217	6.95704
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.09035	0.63635	7.24232
	B->Y (RR)	0.08100	0.61119	7.12866
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.11827	0.62872	7.59950
	B->Y (RR)	0.10875	0.60723	7.50454
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.17137	0.67933	8.07568
	B->Y (RR)	0.16186	0.66386	8.00180
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.09250	0.82315	6.93121
	B->Y (RR)	0.08439	0.79437	6.80872

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)	0.15010	0.75828	6.73452
	B->Y (FF)	0.12607	0.72627	6.51625
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.18336	0.75594	7.04422
	B->Y (FF)	0.15943	0.73256	6.84718
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.26226	0.82501	7.55159
	B->Y (FF)	0.23834	0.80713	7.38887
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.41952	0.99618	8.12222
	B->Y (FF)	0.39560	0.97303	8.02914
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.17613	0.77175	5.82579
	B->Y (FF)	0.14896	0.74900	5.69264

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	0.00533	0.00464	0.00735
	B	0.00000	0.00000	0.00000
	B	0.00403	0.00358	0.00735
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00911	0.00860	0.01153
	B	0.00000	0.00000	0.00000
	B	0.00774	0.00768	0.01143
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01735	0.01752	0.02098
	B	0.00000	0.00000	0.00000
	B	0.01595	0.01662	0.02027
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03365	0.03488	0.03844
	B	0.00000	0.00000	0.00000
	B	0.03228	0.03421	0.03913
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00386	0.00335	0.00581
	B	0.00000	0.00000	0.00000
	B	0.00300	0.00271	0.00564

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	0.01165	0.01147	0.01307
	B	0.00000	0.00000	0.00000
	B	0.00969	0.00975	0.01397
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01425	0.01462	0.01618
	B	0.00000	0.00000	0.00000
	B	0.01227	0.01283	0.01675
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02064	0.02195	0.02360
	B	0.00000	0.00000	0.00000
	B	0.01894	0.02011	0.02391
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03412	0.03614	0.03871
	B	0.00000	0.00000	0.00000
	B	0.03233	0.03421	0.03882
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00860	0.00827	0.00979
	B	0.00000	0.00000	0.00000
	B	0.00727	0.00721	0.01019

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)	-0.00283	-0.00315	-0.00312
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00283	-0.00315	-0.00312
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00283	-0.00315	-0.00312
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00283	-0.00315	-0.00312
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00193	-0.00212	-0.00210

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)	0.00311	0.00316	0.00312
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00311	0.00316	0.00312
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00311	0.00316	0.00312
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00311	0.00316	0.00312
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00210	0.00213	0.00210

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)	-0.00148	-0.00152	-0.00149
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00148	-0.00152	-0.00149
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00148	-0.00152	-0.00149
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00148	-0.00152	-0.00149
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00105	-0.00103

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)	0.00157	0.00159	0.00151
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00157	0.00159	0.00151
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00158	0.00159	0.00151
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00158	0.00159	0.00151
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00108	0.00110	0.00105

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00426	0.00546	0.72960
sky130_osu_sc_15T_ls__tbufi_l	0.00323	0.00418	0.45399

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00038	0.00070
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.00143	0.00452

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)	0.05993	1.01842	11.91140
	OE->Y (FR)	0.05880	0.34821	4.86200
	OE->Y (RR)	0.10203	0.84382	7.01403
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.07969	1.17408	12.04080
	OE->Y (FR)	0.06828	0.34791	4.86190
	OE->Y (RR)	0.11714	0.98360	6.96769

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)	0.03496	0.60140	7.19909
	OE->Y (FF)	0.05986	0.34828	4.86208
	OE->Y (RF)	0.03401	0.57918	6.80974
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.03808	0.59720	6.43162
	OE->Y (FF)	0.06935	0.34797	4.86198
	OE->Y (RF)	0.03620	0.57364	6.02030

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	0.00506	0.00494	0.00537
	OE	0.00000	0.00000	0.00000
	OE	0.00507	0.00456	0.00899
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00375	0.00363	0.00399
	OE	0.00000	0.00000	0.00000
	OE	0.00354	0.00316	0.00675

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	-0.00076	-0.00079	-0.00053
	OE	0.00000	0.00000	0.00000
	OE	0.00334	0.00279	0.00760
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00045	-0.00048	-0.00020
	OE	0.00000	0.00000	0.00000
	OE	0.00226	0.00186	0.00570

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)	-0.00246	-0.00250	-0.00247
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00220	-0.00221	-0.00220
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00180	-0.00182	-0.00180
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00163	-0.00163	-0.00162

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)	0.00246	0.00250	0.00247
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00225	0.00226	0.00223
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00180	0.00182	0.00180
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00166	0.00165	0.00164

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)	0.00194	0.00139	0.00622
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00173	0.00120	0.00601
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00129	0.00089	0.00476
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00114	0.00076	0.00461

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)	0.00583	0.00539	0.01032
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00603	0.00561	0.01046
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00448	0.00415	0.00776
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00463	0.00429	0.00786

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00425	0.00653	0.73510
sky130_osu_sc_15T_ls__tnbufi_l	0.00322	0.00472	0.45046

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00043	0.00056
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.00208	0.00257

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)	0.06060	1.02135	11.96680
	OE->Y (RR)	0.03089	0.34773	4.86260
	OE->Y (FR)	0.07494	1.03727	11.85570
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.08030	1.17015	11.98300
	OE->Y (RR)	0.03050	0.34770	4.86251
	OE->Y (FR)	0.09248	1.17741	11.74220

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)	0.03437	0.60255	7.22852
	OE->Y (RF)	0.03044	0.34772	4.86256
	OE->Y (FF)	0.06755	0.60835	5.22497
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.03734	0.59525	6.40324
	OE->Y (RF)	0.03035	0.34769	4.86252
	OE->Y (FF)	0.07777	0.63132	4.75811

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	0.00521	0.00508	0.00557
	OE	0.00000	0.00000	0.00000
	OE	0.01259	0.01253	0.01802
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00390	0.00377	0.00412
	OE	0.00000	0.00000	0.00000
	OE	0.00907	0.00900	0.01296

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	-0.00095	-0.00097	-0.00071
	OE	0.00000	0.00000	0.00000
	OE	0.01106	0.01098	0.01577
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00063	-0.00066	-0.00038
	OE	0.00000	0.00000	0.00000
	OE	0.00792	0.00783	0.01138

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)	-0.00209	-0.00212	-0.00210
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00185	-0.00186	-0.00185
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00144	-0.00147	-0.00145
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00129	-0.00129	-0.00128

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)	0.00209	0.00212	0.00210
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00189	0.00190	0.00187
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00144	0.00147	0.00145
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00131	0.00131	0.00129

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)	-0.00365	-0.00447	0.00058
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00352	-0.00439	0.00062
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00239	-0.00296	0.00102
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00229	-0.00278	0.00106

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)	0.00947	0.00945	0.01483
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00930	0.00930	0.01467
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00681	0.00677	0.01068
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00671	0.00664	0.01058

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00844	0.00750	0.74676

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00101	0.00126

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	0.12965	0.89399	7.26283
	A->Y (FR)	!B	0.08110	1.04628	12.04820
	B->Y (RR)	A	0.10413	0.86623	7.22276
	B->Y (FR)	!A	0.10444	1.06695	11.93490

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	0.11464	0.70103	5.56915
	A->Y (RF)	!B	0.04867	0.59434	6.90134
	B->Y (FF)	A	0.10166	0.68812	5.55915
	B->Y (RF)	!A	0.05885	0.60871	6.91231

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	0.00515	0.00450	0.00872
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01252	0.01206	0.01740
	B	A	0.00000	0.00000	0.00000
	B	A	0.00199	0.00155	0.00622
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01358	0.01330	0.01844

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	0.01515	0.01448	0.01899
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00348	0.00279	0.00754
	B	A	0.00000	0.00000	0.00000
	B	A	0.01386	0.01384	0.01867
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00429	0.00349	0.00825

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00845	0.00755	0.72533

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00101	0.00112

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	0.12951	0.88159	7.13805
	A->Y (FR)	B	0.09723	1.05603	11.84300
	B->Y (RR)	!A	0.10937	0.87001	7.13886
	B->Y (FR)	A	0.10684	1.06699	11.84410

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	0.10582	0.68971	5.46871
	A->Y (RF)	B	0.04883	0.62246	7.19567
	B->Y (FF)	!A	0.09934	0.68313	5.46683
	B->Y (RF)	A	0.05795	0.60528	6.81063

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	0.01463	0.01426	0.01946
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00280	0.00155	0.00586
	B	A	0.00000	0.00000	0.00000
	B	A	0.01497	0.01467	0.01985
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00182	0.00132	0.00595

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	0.00280	0.00186	0.00673
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01576	0.01561	0.02000
	B	A	0.00000	0.00000	0.00000
	B	A	0.00282	0.00197	0.00668
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01410	0.01412	0.01902

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_tt_1P68_25C.ccs
Cell Library: Process , Voltage 1.68,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_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	0.32950
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	159873.00000	319747.00000
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
	-0.00234	0.03293	0.47444

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
	2.78323	2.63455	0.59906