sky130_osu_sc_15T_ls_ff_1P95_-40C.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_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.01515	0.01511	0.01173	2.40566	1.15520	2.27460
sky130_osu_sc_15T_ls__addf_l	0.01515	0.01510	0.01173	1.44112	1.15621	1.49643

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	0.00681	0.00861
sky130_osu_sc_15T_ls__addf_l	0.00000	0.02494	0.04190

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)	0.09881	1.34473	22.65500
	B->CO (RR)	0.08769	1.28677	21.76490
	CI->CO (RR)	0.09351	1.36197	23.01350
	CON->CO (FR)	0.02088	0.68004	11.44490
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.10265	1.24462	17.41950
	B->CO (RR)	0.09164	1.20351	16.92520
	CI->CO (RR)	0.09735	1.26588	17.87420
	CON->CO (FR)	0.02632	0.76701	11.45080

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)	0.14267	1.73891	28.90330
	B->CO (FF)	0.12557	1.64665	27.57400
	CI->CO (FF)	0.12401	1.73558	29.18190
	CON->CO (RF)	0.01629	0.47602	8.09503
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.13524	1.42715	19.71670
	B->CO (FF)	0.11886	1.35914	19.05920
	CI->CO (FF)	0.11655	1.42413	20.03090
	CON->CO (RF)	0.01675	0.43945	6.52494

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)	0.11916	0.86740	10.94700
	B->CON (FR)	0.10191	0.81705	10.62850
	CI->CON (FR)	0.10050	0.86562	11.27550
sky130_osu_sc_15T_ls__addf_l	A->CON (FR)	0.11312	0.86177	10.94670
	B->CON (FR)	0.09639	0.81190	10.62700
	CI->CON (FR)	0.09445	0.86004	11.27530

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)	0.05925	0.47020	5.92502
	B->CON (RF)	0.04852	0.45171	5.82824
	CI->CON (RF)	0.05395	0.49259	6.34784
sky130_osu_sc_15T_ls__addf_l	A->CON (RF)	0.05698	0.46789	5.92586
	B->CON (RF)	0.04645	0.44943	5.82917
	CI->CON (RF)	0.05167	0.49013	6.34880

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)	0.20882	1.59736	23.30280
	B->S (-R)	0.20823	1.56756	22.38060
	CI->S (-R)	0.18899	1.59145	23.58570
	CON->S (RR)	0.05827	0.49641	6.45789
sky130_osu_sc_15T_ls__addf_l	A->S (-R)	0.20176	1.49429	19.18300
	B->S (-R)	0.20144	1.47755	18.64350
	CI->S (-R)	0.18189	1.48889	19.48860
	CON->S (RR)	0.05981	0.56450	6.52368

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)	0.16003	1.16263	16.23850
	B->S (-F)	0.16583	1.13368	15.77100
	CI->S (-F)	0.15445	1.17775	16.60550
	CON->S (FF)	0.06900	0.56283	6.84031
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.14784	1.01703	12.40680
	B->S (-F)	0.15419	1.00281	12.16970
	CI->S (-F)	0.14226	1.03574	12.84900
	CON->S (FF)	0.06356	0.54289	6.03860

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	0.00365	0.00423	0.02029
	B	0.00435	0.00489	0.01898
	CI	0.00563	0.00633	0.02263
sky130_osu_sc_15T_ls__addf_l	A	0.00275	0.00309	0.01326
	B	0.00346	0.00378	0.01250
	CI	0.00473	0.00515	0.01571

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01452	0.01577	0.04843
	B	0.01507	0.01603	0.04454
	CI	0.01226	0.01353	0.04706
sky130_osu_sc_15T_ls__addf_l	A	0.01366	0.01443	0.03407
	B	0.01423	0.01485	0.03149
	CI	0.01141	0.01229	0.03306

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01452	0.01517	0.03053
	B	0.01482	0.01529	0.02831
	CI	0.01224	0.01300	0.02926
sky130_osu_sc_15T_ls__addf_l	A	0.01365	0.01431	0.03001
	B	0.01398	0.01443	0.02773
	CI	0.01140	0.01215	0.02873

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00418	0.00415	0.01094
	B	0.00434	0.00459	0.01239
	CI	0.00561	0.00613	0.01553
sky130_osu_sc_15T_ls__addf_l	A	0.00329	0.00319	0.01007
	B	0.00345	0.00358	0.01124
	CI	0.00471	0.00509	0.01447

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01452	0.01573	0.04640
	B	0.01506	0.01600	0.04291
	CI	0.01226	0.01348	0.04502
sky130_osu_sc_15T_ls__addf_l	A	0.01366	0.01445	0.03483
	B	0.01423	0.01486	0.03233
	CI	0.01141	0.01230	0.03379

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.03227	0.03239	0.05382
	B	0.02851	0.02905	0.06109
	CI	0.02615	0.02614	0.04809
sky130_osu_sc_15T_ls__addf_l	A	0.03101	0.03095	0.05305
	B	0.02731	0.02789	0.06142
	CI	0.02495	0.02480	0.04801

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00739	0.00823	2.34091	1.27287	2.40161
sky130_osu_sc_15T_ls__addh_l	0.00740	0.00823	1.53205	1.28038	1.54298

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	0.00692	0.00825
sky130_osu_sc_15T_ls__addh_l	0.00000	0.02954	0.04166

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)	0.06690	0.49493	6.22728
	B->CO (RR)	0.06962	0.49733	6.31602
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.06963	0.56884	6.40382
	B->CO (RR)	0.07235	0.57159	6.46303

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)	0.06083	0.53963	6.81996
	B->CO (FF)	0.06570	0.55217	6.84201
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.05670	0.49143	5.46051
	B->CO (FF)	0.06123	0.50400	5.48475

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	0.09599	0.39732	3.03699
	A->CON (FR)	!B	0.06306	0.80327	11.15540
	B->CON (RR)	A	0.09870	0.39913	3.12749
	B->CON (FR)	!A	0.07762	0.80958	10.99190
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.08877	0.38531	3.05793
	A->CON (FR)	!B	0.05759	0.79921	11.19050
	B->CON (RR)	A	0.09151	0.38760	3.11980
	B->CON (FR)	!A	0.07211	0.80541	11.02680

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	0.09175	0.55339	5.64921
	A->CON (RF)	!B	0.03486	0.47457	6.55958
	B->CON (FF)	A	0.09115	0.57958	5.94126
	B->CON (RF)	!A	0.04124	0.45966	6.19076
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.08590	0.54155	5.62344
	A->CON (RF)	!B	0.03281	0.47291	6.58288
	B->CON (FF)	A	0.08532	0.56760	5.91487
	B->CON (RF)	!A	0.03923	0.45822	6.21322

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	0.06996	1.30517	22.49840
	A->S (FR)	B	0.12726	1.36484	21.19260
	B->S (RR)	!A	0.07629	1.25556	21.43830
	B->S (FR)	A	0.12739	1.42708	22.21140
	CON->S (FR)	-	0.02315	0.69768	11.72020
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.07126	1.22551	18.13730
	A->S (FR)	B	0.12480	1.27769	16.84550
	B->S (RR)	!A	0.07767	1.18688	17.39870
	B->S (FR)	A	0.12486	1.32967	17.54380
	CON->S (FR)	-	0.02687	0.77641	11.77600

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	0.08523	1.56701	26.85380
	A->S (RF)	B	0.11698	0.98173	14.55840
	B->S (FF)	!A	0.09980	1.57497	26.74010
	B->S (RF)	A	0.11969	0.98318	14.64370
	CON->S (RF)	-	0.01521	0.46265	7.88246
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.07916	1.33335	19.68410
	A->S (RF)	B	0.10940	0.83123	9.98240
	B->S (FF)	!A	0.09379	1.34034	19.53820
	B->S (RF)	A	0.11213	0.83331	10.04000
	CON->S (RF)	-	0.01570	0.44295	6.71474

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	0.00689	0.00688	0.01761
	B	0.00000	0.00000	0.00000
	B	0.00622	0.00602	0.01893
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00602	0.00601	0.01923
	B	0.00000	0.00000	0.00000
	B	0.00535	0.00514	0.01930

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	0.01028	0.01038	0.02589
	B	0.00000	0.00000	0.00000
	B	0.01077	0.01141	0.02770
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00944	0.00956	0.02484
	B	0.00000	0.00000	0.00000
	B	0.00995	0.01049	0.02597

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	0.00689	0.00689	0.01785
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00922	0.00949	0.01452
	B	A	0.00000	0.00000	0.00000
	B	A	0.00621	0.00602	0.01924
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01031	0.01035	0.01371
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00602	0.00601	0.01881
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00863	0.00889	0.01435
	B	A	0.00000	0.00000	0.00000
	B	A	0.00534	0.00512	0.01937
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00971	0.00972	0.01338

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	0.01026	0.01040	0.02588
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00132	0.00144	0.00519
	B	A	0.00000	0.00000	0.00000
	B	A	0.01077	0.01139	0.02726
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00228	0.00226	0.00496
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00945	0.00956	0.02506
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00054	0.00049	0.00385
	B	A	0.00000	0.00000	0.00000
	B	A	0.00995	0.01048	0.02623
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00152	0.00146	0.00396

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	0.01028	0.01038	0.02596
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00133	0.00153	0.00493
	B	A	0.00000	0.00000	0.00000
	B	A	0.01078	0.01142	0.02774
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00231	0.00235	0.00528
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00945	0.00957	0.02523
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00055	0.00071	0.00301
	B	A	0.00000	0.00000	0.00000
	B	A	0.00995	0.01049	0.02644
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00153	0.00153	0.00346

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	0.00689	0.00689	0.01784
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00922	0.00968	0.01576
	B	A	0.00000	0.00000	0.00000
	B	A	0.00622	0.00602	0.01967
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01033	0.01049	0.01541
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00602	0.00602	0.01922
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00863	0.00897	0.01440
	B	A	0.00000	0.00000	0.00000
	B	A	0.00535	0.00514	0.01965
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00972	0.00978	0.01371

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00401	0.00411	2.38367
sky130_osu_sc_15T_ls__and2_2	0.00401	0.00411	4.58684
sky130_osu_sc_15T_ls__and2_4	0.00401	0.00412	8.72577
sky130_osu_sc_15T_ls__and2_6	0.00405	0.00412	12.84758
sky130_osu_sc_15T_ls__and2_8	0.00402	0.00413	16.70708
sky130_osu_sc_15T_ls__and2_l	0.00310	0.00322	1.44302

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	0.00341	0.00539
sky130_osu_sc_15T_ls__and2_2	0.00000	0.00542	0.00548
sky130_osu_sc_15T_ls__and2_4	0.00000	0.00943	0.01074
sky130_osu_sc_15T_ls__and2_6	0.00000	0.01345	0.01603
sky130_osu_sc_15T_ls__and2_8	0.00000	0.01747	0.02133
sky130_osu_sc_15T_ls__and2_l	0.00000	0.02603	0.04157

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)	0.05129	0.44619	6.22199
	B->Y (RR)	0.05482	0.45184	6.09476
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.05868	0.39154	6.14703
	B->Y (RR)	0.06221	0.39469	6.03195
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.08077	0.39555	6.31243
	B->Y (RR)	0.08430	0.39459	6.22060
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.10211	0.42151	6.49067
	B->Y (RR)	0.10557	0.41686	6.40887
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.12342	0.45273	6.67105
	B->Y (RR)	0.12695	0.44565	6.59671
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.05588	0.50804	5.89132
	B->Y (RR)	0.05952	0.51295	5.75870

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)	0.04755	0.48719	6.46143
	B->Y (FF)	0.05069	0.49860	6.48520
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.05450	0.45925	6.42675
	B->Y (FF)	0.05787	0.46891	6.47157
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.07480	0.47651	6.53122
	B->Y (FF)	0.07772	0.48317	6.56485
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.09748	0.50803	6.66576
	B->Y (FF)	0.09978	0.51314	6.70648
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.11839	0.53713	6.71335
	B->Y (FF)	0.12043	0.53928	6.74858
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.05316	0.50381	5.78928
	B->Y (FF)	0.05790	0.51727	5.85346

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	0.00483	0.00562	0.05491
	B	0.00000	0.00000	0.00000
	B	0.00490	0.00492	0.03460
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00959	0.01052	0.05964
	B	0.00000	0.00000	0.00000
	B	0.00969	0.00997	0.04007
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02012	0.02173	0.06788
	B	0.00000	0.00000	0.00000
	B	0.02024	0.02137	0.05118
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03118	0.03302	0.07633
	B	0.00000	0.00000	0.00000
	B	0.03128	0.03259	0.06095
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04250	0.04380	0.08409
	B	0.00000	0.00000	0.00000
	B	0.04263	0.04348	0.06974
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00349	0.00457	0.04690
	B	0.00000	0.00000	0.00000
	B	0.00358	0.00392	0.03039

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	0.01258	0.01458	0.05447
	B	0.00000	0.00000	0.00000
	B	0.01426	0.01575	0.05252
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01627	0.01875	0.05814
	B	0.00000	0.00000	0.00000
	B	0.01800	0.01971	0.05669
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02575	0.02843	0.06730
	B	0.00000	0.00000	0.00000
	B	0.02739	0.02923	0.06539
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.03547	0.03806	0.07702
	B	0.00000	0.00000	0.00000
	B	0.03702	0.03881	0.07489
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.04669	0.04828	0.08727
	B	0.00000	0.00000	0.00000
	B	0.04801	0.04974	0.08392
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00975	0.01136	0.04335
	B	0.00000	0.00000	0.00000
	B	0.01097	0.01219	0.04191

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)	-0.00465	-0.00466	-0.00468
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00465	-0.00467	-0.00468
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00465	-0.00466	-0.00468
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00468	-0.00470	-0.00471
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00465	-0.00466	-0.00468
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00336	-0.00337	-0.00338

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)	0.00467	0.00476	0.00469
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00467	0.00476	0.00469
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00467	0.00476	0.00469
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00470	0.00480	0.00472
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00467	0.00476	0.00469
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00338	0.00345	0.00339

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)	-0.00437	-0.00440	-0.00438
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00437	-0.00442	-0.00439
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00438	-0.00441	-0.00439
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00437	-0.00440	-0.00439
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00437	-0.00441	-0.00439
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00318	-0.00320	-0.00318

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)	0.00440	0.00446	0.00440
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00440	0.00446	0.00440
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00440	0.00446	0.00440
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00440	0.00446	0.00440
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00440	0.00446	0.00440
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00322	0.00322	0.00319

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00377	0.00394	0.00383	1.11022

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	0.00147	0.00265

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)	0.06259	0.81884	10.89850
	A1->Y (FR)	0.05160	0.76984	10.41060
	B0->Y (FR)	0.04585	0.81905	11.24310

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)	0.03183	0.42014	5.50748
	A1->Y (RF)	0.02837	0.42436	5.63029
	B0->Y (RF)	0.01985	0.40029	5.41099

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	0.01119	0.01109	0.01452
	A1	0.00000	0.00000	0.00000
	A1	0.00930	0.00917	0.01251
	B0	0.00660	0.00709	0.01737

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	0.00194	0.00164	0.00517
	A1	0.00000	0.00000	0.00000
	A1	0.00200	0.00191	0.00662
	B0	-0.00113	-0.00063	0.00628

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)	-0.00375	-0.00400	-0.00399
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00404	-0.00408	-0.00405
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00404	-0.00405	-0.00405

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)	0.00396	0.00401	0.00399
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00404	0.00409	0.00406
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00407	0.00405	0.00406

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)	-0.00370	-0.00391	-0.00392
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00397	-0.00400	-0.00398
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00435	-0.00438	-0.00438

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)	0.00390	0.00391	0.00392
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00397	0.00403	0.00399
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00437	0.00446	0.00439

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)	-0.00174	-0.00179	-0.00175

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)	0.00189	0.00191	0.00179

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__aoi22_l	0.00376	0.00391	0.00407	0.00386	1.14413

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi22_l	0.00000	0.00185	0.00530

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)	0.07643	0.82889	10.91930
	A1->Y (FR)	0.06774	0.81028	10.79280
	B0->Y (FR)	0.04669	0.80237	11.08700
	B1->Y (FR)	0.05554	0.82517	11.28050

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)	0.04167	0.43655	5.63580
	A1->Y (RF)	0.03819	0.44046	5.76220
	B0->Y (RF)	0.02172	0.42051	5.74597
	B1->Y (RF)	0.02520	0.41593	5.62061

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	0.01371	0.01356	0.01674
	A1	0.01183	0.01136	0.01484
	B0	0.00723	0.00749	0.01555
	B1	0.00907	0.00929	0.01700

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00421	0.00390	0.00746
	A1	0.00427	0.00415	0.00883
	B0	-0.00073	-0.00047	0.00424
	B1	-0.00062	-0.00065	0.00292

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)	-0.00381	-0.00399	-0.00399
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00404	-0.00408	-0.00405
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00404	-0.00405	-0.00405
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00404	-0.00405	-0.00405

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)	0.00396	0.00400	0.00399
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00405	0.00409	0.00406
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00407	0.00405	0.00406
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00407	0.00405	0.00406

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)	-0.00374	-0.00392	-0.00392
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00396	-0.00399	-0.00398
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00434	-0.00437	-0.00437
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00434	-0.00437	-0.00437

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)	0.00389	0.00395	0.00392
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00396	0.00403	0.00399
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00436	0.00445	0.00438
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00436	0.00445	0.00438

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)	-0.00176	-0.00180	-0.00176
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00175	-0.00177	-0.00176
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00451	-0.00454	-0.00454
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00451	-0.00455	-0.00454

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)	0.00196	0.00198	0.00181
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00176	0.00177	0.00176
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00452	0.00454	0.00455
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00452	0.00456	0.00455

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)	-0.00177	-0.00180	-0.00178
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00177	-0.00179	-0.00177
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00412	-0.00414	-0.00413
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00412	-0.00416	-0.00413

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)	0.00198	0.00199	0.00183
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00177	0.00179	0.00177
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00415	0.00418	0.00414
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00415	0.00418	0.00414

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00411	2.31593
sky130_osu_sc_15T_ls__buf_2	0.00414	4.56407
sky130_osu_sc_15T_ls__buf_4	0.00414	8.79217
sky130_osu_sc_15T_ls__buf_6	0.00091	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00416	16.81228
sky130_osu_sc_15T_ls__buf_l	0.00324	1.44350

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	0.00274	0.00274
sky130_osu_sc_15T_ls__buf_2	0.00000	0.00411	0.00539
sky130_osu_sc_15T_ls__buf_4	0.00000	0.00684	0.01068
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	0.01232	0.02128
sky130_osu_sc_15T_ls__buf_l	0.00000	0.02086	0.02086

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)**	0.04198	0.42477	5.95184
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.04814	0.36838	5.96448
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.06549	0.36461	6.15681
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.09898	0.40856	6.43016
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.04701	0.48525	5.66105

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)**	0.04477	0.47484	6.33058
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.05306	0.46582	6.65723
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.07365	0.48479	6.92110
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.11722	0.54351	7.14858
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.05083	0.49695	5.80580

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	0.00446	0.00526	0.03968
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00920	0.00987	0.04381
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01965	0.02073	0.05548
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04142	0.04303	0.07608
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00334	0.00436	0.03634

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	0.01204	0.01383	0.05226
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01584	0.01771	0.05188
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02524	0.02733	0.06189
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.04582	0.04780	0.08101
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00938	0.01086	0.04226

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
	-0.00082	-0.00082	-0.00082

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
	0.00082	0.00082	0.00082

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00388	0.00387	0.01137	2.14996	2.12842
sky130_osu_sc_15T_ls__dffr_l	0.00388	0.00387	0.01136	1.44397	1.43657

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	0.02952	0.04741
sky130_osu_sc_15T_ls__dffr_l	0.00000	0.04765	0.06554

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)	0.21483	1.05581	13.58830
	QN->Q (FR)	0.02700	0.81332	13.37530
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.20554	1.10324	12.41310
	QN->Q (FR)	0.02959	0.85390	12.75160

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)	0.20494	1.04167	13.62060
	QN->Q (RF)	0.01864	0.54130	8.86500
	RN->Q (FF)	0.15255	1.16145	16.14440
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.20761	1.11543	12.61750
	QN->Q (RF)	0.01818	0.50470	7.54833
	RN->Q (FF)	0.15549	1.23287	15.13470

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)	0.18397	0.59576	5.98954
	RN->QN (FR)	0.13153	0.71367	8.51375
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.18640	0.66727	6.09148
	RN->QN (FR)	0.13419	0.78483	8.60954

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)**	0.17941	0.47594	3.74854
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.16650	0.45952	3.07857

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)	-0.04435	-0.06000	-0.09876
	setup	CK (R)	0.17102	0.21310	0.41806
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.04522	-0.06000	-0.09958
	setup	CK (R)	0.17247	0.21472	0.41579

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)	-0.08293	-0.29739	-4.15887
	setup	CK (R)	0.10250	0.30899	4.19755
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08388	-0.29676	-4.15921
	setup	CK (R)	0.10248	0.30899	4.19750

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)	-0.04435	-0.06000	-0.09876
	setup	CK (R)	0.17102	0.21310	0.41806
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.04522	-0.06000	-0.09958
	setup	CK (R)	0.17247	0.21472	0.41579

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)	-0.08293	-0.29739	-4.15887
	setup	CK (R)	0.10250	0.30899	4.19755
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08388	-0.29676	-4.15921
	setup	CK (R)	0.10248	0.30899	4.19750

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)	0.14838	0.18496	0.67862
	removal	CK (R)	-0.03258	-0.04225	-0.11939
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.14871	0.18685	0.67593
	removal	CK (R)	-0.03258	-0.04225	-0.11939

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)	0.14838	0.18496	0.67862
	removal	CK (R)	-0.03258	-0.04225	-0.11939
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.14871	0.18685	0.67593
	removal	CK (R)	-0.03258	-0.04225	-0.11939

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 ()	0.09032	0.43579	13.33370
	min_pulse_width	RN ()	0.09032	0.43579	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.08703	0.43579	13.33370
	min_pulse_width	RN ()	0.08703	0.43579	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 ()	0.10019	0.43579	13.33370
	min_pulse_width	CK ()	0.10348	0.43579	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.09032	0.43579	13.33370
	min_pulse_width	CK ()	0.10019	0.43579	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 ()	0.21864	0.43579	13.33370
	min_pulse_width	CK ()	0.08045	0.43579	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.21864	0.43579	13.33370
	min_pulse_width	CK ()	0.08045	0.43579	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	0.01200	0.00815	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01059	0.00808	0.00577

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	0.01401	0.01027	0.00000
	RN	-0.00158	-0.11624	-2.04380
	RN	0.03243	0.02900	-0.00749
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01260	0.01059	0.00725
	RN	-0.00158	-0.09154	-1.37268
	RN	0.03100	0.02928	0.02738

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	0.01400	0.01029	0.00000
	RN	-0.00158	-0.11554	-2.02333
	RN	0.03242	0.02906	-0.00692
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01260	0.01059	0.00798
	RN	-0.00158	-0.09126	-1.36564
	RN	0.03100	0.02928	0.02745

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	0.01196	0.00818	0.00000
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01056	0.00810	0.00535

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	-0.00356	-0.00395	-0.00395
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01515	0.01481	0.04372
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00636	0.00616	0.03506
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00356	-0.00395	-0.00395
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01515	0.01481	0.04371
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00636	0.00616	0.03506

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	0.00393	0.00395	0.00395
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02445	0.02429	0.05416
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01176	0.01170	0.03988
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00393	0.00395	0.00395
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02445	0.02428	0.05416
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01176	0.01170	0.03988

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)	0.00448	0.00520	0.05683
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01364	0.01400	0.06661
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)	0.00448	0.00520	0.05683
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01363	0.01400	0.06661

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)	0.01180	0.01324	0.06472
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02445	0.02559	0.07876
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)	0.01180	0.01323	0.06472
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02444	0.02559	0.07876

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)	-0.00105	-0.00060	0.05109
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00759	0.00678	0.06002
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00149	-0.00098	0.05041
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00105	-0.00060	0.05109
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00759	0.00676	0.06003
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00149	-0.00098	0.05041

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)	0.01768	0.01922	0.07091
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03842	0.03878	0.10214
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02903	0.02998	0.08207
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03707	0.03961	0.12438
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02000	0.02129	0.07192
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01768	0.01915	0.07091
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03842	0.03877	0.10214
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02903	0.02998	0.08207
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03707	0.03956	0.12438
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02000	0.02129	0.07192

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00384	0.00387	0.00854	0.01164	2.42990	2.40262
sky130_osu_sc_15T_ls__dffsr_l	0.00384	0.00387	0.00852	0.01163	1.44109	1.44395

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffsr_1	0.00000	0.01090	0.01439
sky130_osu_sc_15T_ls__dffsr_l	0.00000	0.02902	0.03251

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)	0.21311	1.07985	14.69310
	QN->Q (FR)	0.02336	0.74808	12.65840
	RN->Q (RR)	0.17353	1.05459	14.77120
	SN->Q (FR)	0.15925	1.21578	17.47800
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.21104	1.11187	12.38610
	QN->Q (FR)	0.02961	0.85165	12.71030
	RN->Q (RR)	0.17172	1.08599	12.45120
	SN->Q (FR)	0.15768	1.24421	15.14250

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)	0.23508	1.09034	14.61410
	QN->Q (RF)	0.01841	0.56565	9.58113
	RN->Q (FF)	0.15821	1.18755	17.13600
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.24179	1.15183	12.63040
	QN->Q (RF)	0.01815	0.50373	7.52902
	RN->Q (FF)	0.16476	1.24827	15.13550

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)	0.21409	0.61833	6.14744
	RN->QN (FR)	0.13732	0.71630	8.66633
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.22053	0.70599	6.16822
	RN->QN (FR)	0.14351	0.80311	8.68169

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)	0.18135	0.50080	4.34410
	RN->QN (RF)	0.14235	0.47525	4.42227
	SN->QN (FF)	0.12805	0.63637	7.12684
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.17359	0.47103	3.10750
	RN->QN (RF)	0.13532	0.44631	3.18215
	SN->QN (FF)	0.12093	0.60264	5.87260

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)	-0.04487	-0.06552	-0.12829
	setup	CK (R)	0.16631	0.20576	0.47164
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.04506	-0.06552	-0.12829
	setup	CK (R)	0.16679	0.20630	0.47239

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)	-0.09720	-0.31660	-4.24149
	setup	CK (R)	0.12250	0.32712	4.27824
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.09518	-0.31433	-4.24130
	setup	CK (R)	0.12251	0.32678	4.27841

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)	-0.04487	-0.06552	-0.12829
	setup	CK (R)	0.16631	0.20576	0.47164
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.04506	-0.06552	-0.12829
	setup	CK (R)	0.16679	0.20630	0.47239

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)	-0.09720	-0.31660	-4.24149
	setup	CK (R)	0.12250	0.32712	4.27824
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.09518	-0.31433	-4.24130
	setup	CK (R)	0.12251	0.32678	4.27841

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)	0.13040	0.16562	0.65312
	removal	CK (R)	-0.01766	-0.02247	-0.06933
	hold	SN (R)	-0.12355	-0.25013	-1.09195
	setup	SN (R)	0.14470	0.29427	2.39206
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.13025	0.16595	0.65193
	removal	CK (R)	-0.01766	-0.02247	-0.06933
	hold	SN (R)	-0.11759	-0.24277	-1.04238
	setup	SN (R)	0.14541	0.28687	2.24878

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)	0.13040	0.16562	0.65312
	removal	CK (R)	-0.01766	-0.02247	-0.06933
	hold	SN (R)	-0.12355	-0.25013	-1.09195
	hold	SN (R)	-0.12401	-0.25013	-1.09778
	setup	SN (R)	0.14427	0.29427	2.21162
	setup	SN (R)	0.14470	0.29427	2.39206
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.13025	0.16595	0.65193
	removal	CK (R)	-0.01766	-0.02247	-0.06933
	hold	SN (R)	-0.11759	-0.24277	-1.04238
	hold	SN (R)	-0.11759	-0.24277	-1.04713
	setup	SN (R)	0.14541	0.28356	2.06489
	setup	SN (R)	0.13594	0.28687	2.24878

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 ()	0.10348	0.43579	13.33370
	min_pulse_width	RN ()	0.10677	0.43579	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.10348	0.43579	13.33370
	min_pulse_width	RN ()	0.10019	0.43579	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)	0.02809	0.06285	2.56178
	removal	CK (R)	-0.01293	-0.04782	-0.22636
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.02944	0.06285	2.49725
	removal	CK (R)	-0.01293	-0.04782	-0.22928

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)	0.02809	0.06285	2.56178
	removal	CK (R)	-0.01293	-0.04782	-0.22636
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.02944	0.06285	2.49725
	removal	CK (R)	-0.01293	-0.04782	-0.22928

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 ()	0.12981	0.43579	13.33370
	min_pulse_width	SN ()	0.12981	0.43579	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.12651	0.43579	13.33370
	min_pulse_width	SN ()	0.11993	0.43579	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 ()	0.09361	0.43579	13.33370
	min_pulse_width	CK ()	0.11993	0.43579	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.09032	0.43579	13.33370
	min_pulse_width	CK ()	0.11993	0.43579	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 ()	0.21206	0.43579	13.33370
	min_pulse_width	CK ()	0.10348	0.43579	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.21206	0.43579	13.33370
	min_pulse_width	CK ()	0.10348	0.43579	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	0.01514	0.01069	0.00000
	RN	0.02798	0.02340	-0.01548
	SN	-0.00158	-0.12510	-2.30992
	SN	0.03131	0.02608	-0.04137
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01391	0.01139	0.00902
	RN	0.02673	0.02403	0.01026
	SN	-0.00158	-0.09143	-1.36994
	SN	0.03006	0.02667	0.00538

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	0.01608	0.01387	0.00000
	RN	-0.00158	-0.12510	-2.30992
	RN	0.03376	0.03172	0.01548
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01476	0.01286	0.00984
	RN	-0.00158	-0.09143	-1.36994
	RN	0.03240	0.03072	0.02981

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	0.01607	0.01386	0.00000
	RN	-0.00158	-0.12425	-2.28396
	RN	0.03375	0.03172	0.01579
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01476	0.01286	0.01034
	RN	-0.00158	-0.09154	-1.37265
	RN	0.03240	0.03072	0.02949

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	0.01510	0.01079	0.00000
	RN	0.02794	0.02342	-0.01579
	SN	-0.00158	-0.12425	-2.28387
	SN	0.03127	0.02607	-0.03951
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01386	0.01140	0.00809
	RN	0.02668	0.02395	0.01004
	SN	-0.00158	-0.09154	-1.37260
	SN	0.03002	0.02664	0.00595

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	-0.00383	-0.00396	-0.00396
	(!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)	0.01964	0.01928	0.04786
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00718	0.00696	0.03567
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00716	0.00695	0.03561
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00724	0.00705	0.03573
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00383	-0.00396	-0.00396
	(!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)	0.01964	0.01928	0.04786
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00718	0.00696	0.03567
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00716	0.00695	0.03562
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00724	0.00705	0.03573

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	0.00396	0.00396	0.00396
	(!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)	0.02793	0.02762	0.05548
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01263	0.01258	0.04032
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01266	0.01259	0.04030
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01257	0.01251	0.04025
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00396	0.00396	0.00396
	(!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)	0.02791	0.02761	0.05547
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01262	0.01256	0.04031
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01264	0.01258	0.04029
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01255	0.01250	0.04024

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)	0.00353	0.00410	0.05564
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01631	0.01646	0.06963
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)	0.00353	0.00410	0.05565
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01632	0.01648	0.06964

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)	0.01287	0.01438	0.06609
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02604	0.02703	0.08057
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)	0.01285	0.01437	0.06608
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02602	0.02701	0.08056

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)	-0.00922	-0.00928	-0.00927
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00953	-0.00977	-0.00976
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00915	-0.00930	-0.00926
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00552	0.00560	0.03702
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)	-0.00922	-0.00928	-0.00927
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00951	-0.00974	-0.00974
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00914	-0.00929	-0.00926
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00553	0.00562	0.03703

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)	0.00924	0.00944	0.00930
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00971	0.00977	0.00977
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00924	0.00930	0.00928
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02030	0.01994	0.04771
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)	0.00924	0.00944	0.00930
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00969	0.00974	0.00974
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00923	0.00929	0.00927
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02029	0.01990	0.04775

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)	-0.00105	-0.00056	0.05110
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00872	0.00798	0.06111
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00864	0.00789	0.06107
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00124	-0.00078	0.05067
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00486	0.00567	0.10104
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00105	-0.00056	0.05110
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00871	0.00796	0.06109
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00863	0.00788	0.06106
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00124	-0.00078	0.05067
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00486	0.00567	0.10104

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)	0.04306	0.04345	0.10662
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01775	0.01928	0.07099
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02957	0.03037	0.08224
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02963	0.03039	0.08227
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04046	0.04250	0.12714
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01982	0.02111	0.07175
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02382	0.02629	0.12110
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04306	0.04345	0.10662
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01775	0.01928	0.07099
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02957	0.03052	0.08224
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02963	0.03039	0.08227
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04044	0.04253	0.12713
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01982	0.02111	0.07175
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02380	0.02628	0.12109

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00386	0.00692	0.01140	2.12795	2.13196
sky130_osu_sc_15T_ls__dffs_l	0.00386	0.00692	0.01140	1.44648	1.44123

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	0.03564	0.08865
sky130_osu_sc_15T_ls__dffs_l	0.00000	0.05377	0.10678

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)	0.17119	0.99640	13.33280
	QN->Q (FR)	0.02696	0.80353	13.20810
	SN->Q (FR)	0.14092	1.19089	16.34860
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.16688	1.05655	12.35510
	QN->Q (FR)	0.02954	0.85096	12.71150
	SN->Q (FR)	0.13664	1.24541	15.34010

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)	0.21871	1.05055	13.44090
	QN->Q (RF)	0.01853	0.53724	8.77092
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.22061	1.12936	12.62540
	QN->Q (RF)	0.01807	0.50202	7.52620

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)	0.19752	0.61055	5.98664
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.19936	0.68161	6.10790

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)	0.13902	0.42524	3.68164
	SN->QN (FF)	0.10830	0.61865	6.70727
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.13110	0.41513	3.02595
	SN->QN (FF)	0.10038	0.60221	6.02472

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)	-0.03398	-0.05442	-0.09440
	setup	CK (R)	0.13044	0.17539	0.38859
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.03285	-0.05449	-0.09434
	setup	CK (R)	0.12938	0.17670	0.38899

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)	-0.08592	-0.29795	-4.17595
	setup	CK (R)	0.11019	0.30899	4.21313
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08556	-0.29795	-4.17558
	setup	CK (R)	0.11019	0.30899	4.21313

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)	-0.03398	-0.05442	-0.09440
	setup	CK (R)	0.13044	0.17539	0.38859
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.03285	-0.05449	-0.09434
	setup	CK (R)	0.12938	0.17670	0.38899

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)	-0.08592	-0.29795	-4.17595
	setup	CK (R)	0.11019	0.30899	4.21313
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08556	-0.29795	-4.17558
	setup	CK (R)	0.11019	0.30899	4.21313

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)	0.02379	0.04076	1.57831
	removal	CK (R)	-0.01068	-0.02575	0.06443
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.02344	0.04074	1.45172
	removal	CK (R)	-0.01068	-0.02575	0.06443

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)	0.02379	0.04076	1.57831
	removal	CK (R)	-0.01068	-0.02575	0.06443
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.02344	0.04074	1.45172
	removal	CK (R)	-0.01068	-0.02575	0.06443

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 ()	0.10348	0.43579	13.33370
	min_pulse_width	SN ()	0.10677	0.43579	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.10019	0.43579	13.33370
	min_pulse_width	SN ()	0.10019	0.43579	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 ()	0.07387	0.43579	13.33370
	min_pulse_width	CK ()	0.10677	0.43579	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.06729	0.43579	13.33370
	min_pulse_width	CK ()	0.10348	0.43579	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 ()	0.17587	0.43579	13.33370
	min_pulse_width	CK ()	0.09032	0.43579	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.17587	0.43579	13.33370
	min_pulse_width	CK ()	0.09032	0.43579	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	0.01196	0.00821	0.00000
	SN	-0.00158	-0.11552	-2.02288
	SN	0.02223	0.01875	-0.01842
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01055	0.00818	0.00675
	SN	-0.00158	-0.09164	-1.37506
	SN	0.02084	0.01872	0.01253

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	0.01395	0.01036	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01255	0.01060	0.00814

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	0.01394	0.01037	0.00000
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01255	0.01061	0.00886

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	0.01193	0.00826	0.00000
	SN	-0.00158	-0.11565	-2.02658
	SN	0.02221	0.01874	-0.01916
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01051	0.00818	0.00626
	SN	-0.00158	-0.09144	-1.37002
	SN	0.02082	0.01869	0.01248

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	-0.00390	-0.00403	-0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01467	0.01428	0.04380
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00623	0.00602	0.03497
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00390	-0.00403	-0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01468	0.01428	0.04380
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00623	0.00602	0.03497

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	0.00403	0.00403	0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02419	0.02389	0.05274
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01204	0.01200	0.04020
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00403	0.00403	0.00402
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02419	0.02390	0.05274
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01204	0.01200	0.04020

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)	-0.00679	-0.00682	-0.00682
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00490	0.00545	0.04627
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)	-0.00679	-0.00682	-0.00682
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00490	0.00545	0.04627

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)	0.00683	0.00687	0.00684
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01409	0.01460	0.05425
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)	0.00683	0.00687	0.00684
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01409	0.01460	0.05425

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)	-0.00109	-0.00069	0.05113
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00143	-0.00096	0.05055
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00385	0.00477	0.10082
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00109	-0.00069	0.05113
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00143	-0.00096	0.05055
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00385	0.00477	0.10082

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)	0.03806	0.03844	0.10282
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01770	0.01919	0.07100
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03662	0.03883	0.12362
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01991	0.02122	0.07191
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02311	0.02580	0.12123
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03806	0.03844	0.10282
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01770	0.01919	0.07100
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03662	0.03885	0.12362
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01991	0.02122	0.07191
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02310	0.02579	0.12123

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00402	0.01117	2.42867	2.41184
sky130_osu_sc_15T_ls__dff_l	0.00402	0.01117	1.29694	1.29428

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	0.00993	0.01132
sky130_osu_sc_15T_ls__dff_l	0.00000	0.02806	0.02945

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)	0.13855	0.98893	14.53470
	QN->Q (FR)	0.02320	0.74513	12.60380
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.14271	1.01532	11.51420
	QN->Q (FR)	0.03356	0.91392	13.28850

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)	0.19770	1.04705	14.52140
	QN->Q (RF)	0.01833	0.56315	9.54978
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.20800	1.10245	11.87410
	QN->Q (RF)	0.01819	0.48394	7.03543

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)	0.17698	0.57706	6.10603
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.18694	0.67896	5.97453

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)	0.11052	0.41433	4.23532
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.10720	0.37295	2.58252

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)	-0.02724	-0.04414	-0.09010
	setup	CK (R)	0.09294	0.14712	0.37373
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.02721	-0.04782	-0.08818
	setup	CK (R)	0.09153	0.14708	0.37556

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)	-0.08119	-0.30163	-4.21227
	setup	CK (R)	0.09700	0.31167	4.24303
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.08081	-0.30163	-4.21132
	setup	CK (R)	0.09675	0.31167	4.24303

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 ()	0.05742	0.43579	13.33370
	min_pulse_width	CK ()	0.10348	0.43579	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.05413	0.43579	13.33370
	min_pulse_width	CK ()	0.10019	0.43579	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 ()**	0.13967	0.43579	13.33370
	min_pulse_width	**CK ()**	0.07716	0.43579	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.13967	0.43579	13.33370
	min_pulse_width	**CK ()**	0.07716	0.43579	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	0.01257	0.00828	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01136	0.00910	0.01226

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	0.01413	0.01195	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01279	0.01002	-0.00261

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	0.01412	0.01197	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01279	0.01003	-0.00203

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	0.01254	0.00834	0.00000
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01132	0.00916	0.01153

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	-0.00356	-0.00394	-0.00394
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01322	0.01315	0.04250
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00356	-0.00394	-0.00394
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01323	0.01315	0.04251

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	0.00391	0.00394	0.00394
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02483	0.02462	0.05352
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00391	0.00394	0.00394
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02483	0.02463	0.05353

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)	-0.00109	-0.00065	0.05117
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00141	-0.00089	0.05060
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00109	-0.00065	0.05117
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00141	-0.00093	0.05060

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)	0.01759	0.01910	0.07092
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03665	0.03703	0.10247
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03709	0.03940	0.12543
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01980	0.02111	0.07181
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01759	0.01911	0.07092
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03666	0.03703	0.10248
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03710	0.03941	0.12544
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01980	0.02111	0.07181

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00392	2.27510
sky130_osu_sc_15T_ls__inv_10	0.03612	20.28931
sky130_osu_sc_15T_ls__inv_2	0.00741	4.46722
sky130_osu_sc_15T_ls__inv_3	0.01103	6.48067
sky130_osu_sc_15T_ls__inv_4	0.01456	8.61262
sky130_osu_sc_15T_ls__inv_6	0.02182	12.58612
sky130_osu_sc_15T_ls__inv_8	0.02897	16.52781
sky130_osu_sc_15T_ls__inv_l	0.00300	1.26593

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	0.00137	0.00265
sky130_osu_sc_15T_ls__inv_10	0.00000	0.01369	0.02649
sky130_osu_sc_15T_ls__inv_2	0.00000	0.00274	0.00530
sky130_osu_sc_15T_ls__inv_3	0.00000	0.00411	0.00795
sky130_osu_sc_15T_ls__inv_4	0.00000	0.00548	0.01060
sky130_osu_sc_15T_ls__inv_6	0.00000	0.00821	0.01589
sky130_osu_sc_15T_ls__inv_8	0.00000	0.01095	0.02119
sky130_osu_sc_15T_ls__inv_l	0.00000	0.01043	0.02071

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)**	0.02206	0.68114	11.31070
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.03457	0.46942	11.19330
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.01830	0.58651	11.17170
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.02046	0.55471	11.31500
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.02120	0.52505	11.17660
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.02451	0.49530	11.15620
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.02917	0.47789	11.15020
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.02878	0.77334	11.17180

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)**	0.01600	0.46762	7.82778
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.02576	0.27261	7.75175
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.01350	0.39052	7.79910
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.01507	0.36338	7.95868
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.01521	0.33392	7.87508
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.01894	0.30377	7.84370
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.02227	0.28580	7.82138
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.01631	0.41607	5.93233

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	0.00619	0.00663	0.01226
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.05316	0.06524	0.08415
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01095	0.01247	0.01330
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01682	0.01939	0.03498
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02161	0.02626	0.02535
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.03197	0.03703	0.07202
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.04241	0.05093	0.09649
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00468	0.00501	0.00845

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	-0.00137	-0.00105	0.00253
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01932	-0.01466	0.02118
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00415	-0.00337	0.00396
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00556	-0.00431	0.00643
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00836	-0.00666	0.00801
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	-0.01272	-0.00937	0.01236
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01665	-0.01309	0.01704
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00089	-0.00057	0.00493

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.61979	0.62025	0.00801	0.63629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	0.00414	0.00794

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)	-	0.00982	0.20887	2.36909
	A1->Y (RR)	-	0.01088	0.20887	2.36116
	S0->Y (RR)	(!A0 * A1)	0.03340	0.20203	0.97515
	S0->Y (FR)	(A0 * !A1)	0.02951	0.35721	3.85607

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)	-	0.01021	0.22529	2.61434
	A1->Y (FF)	-	0.00984	0.22363	2.60516
	S0->Y (FF)	(!A0 * A1)	0.04652	0.34265	3.13052
	S0->Y (RF)	(A0 * !A1)	0.01887	0.23049	2.06405

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	-	-0.00643	-0.00643	-0.00644
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00419	-0.00419	-0.00420
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00767	0.01022	0.06289
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00427	-0.00331	0.04946

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	-	0.00643	0.00643	0.00644
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00419	0.00419	0.00420
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00099	0.00241	0.05567
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01697	0.01918	0.07072

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)	-0.00154	-0.00154	-0.00154

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)	0.00154	0.00154	0.00154

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)	-0.00186	-0.00186	-0.00186

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)	0.00186	0.00186	0.00186

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)	-0.00168	-0.00031	0.05247
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00161	-0.00060	0.05261

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)	0.01292	0.01447	0.06675
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01171	0.01359	0.06656

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00392	0.00389	2.24371
sky130_osu_sc_15T_ls__nand2_l	0.00300	0.00299	1.25640

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	0.00140	0.00530
sky130_osu_sc_15T_ls__nand2_l	0.00000	0.01046	0.04142

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)	0.02280	0.68283	11.29750
	B->Y (FR)	0.02714	0.67505	11.07950
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.02970	0.77591	11.16490
	B->Y (FR)	0.03615	0.77966	11.14360

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)	0.02114	0.55377	9.29806
	B->Y (RF)	0.02453	0.55375	9.21010
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.02121	0.49577	7.05346
	B->Y (RF)	0.02420	0.49196	6.92264

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	0.00660	0.00700	0.01213
	B	0.00000	0.00000	0.00000
	B	0.00851	0.00876	0.01402
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00495	0.00532	0.00832
	B	0.00000	0.00000	0.00000
	B	0.00636	0.00658	0.01172

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	-0.00089	-0.00042	0.00254
	B	0.00000	0.00000	0.00000
	B	-0.00085	-0.00085	0.00148
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00060	-0.00036	0.00453
	B	0.00000	0.00000	0.00000
	B	-0.00058	-0.00051	0.00339

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)	-0.00455	-0.00459	-0.00458
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00323	-0.00324	-0.00325

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)	0.00457	0.00466	0.00459
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00324	0.00331	0.00325

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)	-0.00418	-0.00420	-0.00420
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00298	-0.00300	-0.00298

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)	0.00421	0.00425	0.00421
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00301	0.00301	0.00299

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00388	0.00418	1.26917
sky130_osu_sc_15T_ls__nor2_l	0.00289	0.00322	0.79540

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	0.00143	0.00265
sky130_osu_sc_15T_ls__nor2_l	0.00000	0.01064	0.02071

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)	0.04466	0.78438	11.04570
	B->Y (FR)	0.03403	0.77986	11.19970
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.05319	0.88012	10.93810
	B->Y (FR)	0.04346	0.88536	11.23810

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)	0.02186	0.38251	5.31304
	B->Y (RF)	0.01708	0.37359	5.29646
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.02059	0.35021	4.18130
	B->Y (RF)	0.01721	0.34208	4.16697

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	0.00906	0.00900	0.01238
	B	0.00000	0.00000	0.00000
	B	0.00679	0.00709	0.01460
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00648	0.00648	0.01147
	B	0.00000	0.00000	0.00000
	B	0.00506	0.00528	0.01272

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	0.00070	0.00064	0.00554
	B	0.00000	0.00000	0.00000
	B	-0.00106	-0.00076	0.00399
sky130_osu_sc_15T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00042	0.00056	0.00759
	B	0.00000	0.00000	0.00000
	B	-0.00064	-0.00018	0.00642

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)	-0.00358	-0.00399	-0.00397
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00246	-0.00272	-0.00271

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)	0.00395	0.00400	0.00397
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00270	0.00273	0.00271

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)	-0.00176	-0.00181	-0.00177
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00123	-0.00124	-0.00123

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)	0.00185	0.00186	0.00180
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00128	0.00129	0.00124

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00392	0.00399	0.00338	1.22980

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	0.00852	0.02336

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)	0.04807	0.80302	11.24490
	A1->Y (FR)	0.06205	0.81082	11.11490
	B0->Y (FR)	0.03397	0.73206	10.45960

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)	0.02986	0.45318	6.22214
	A1->Y (RF)	0.03491	0.44954	6.07828
	B0->Y (RF)	0.02307	0.48356	6.82295

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	0.00946	0.00966	0.01503
	A1	0.00000	0.00000	0.00000
	A1	0.01174	0.01159	0.01462
	B0	0.00780	0.00791	0.01323

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	0.00017	0.00011	0.00331
	A1	0.00000	0.00000	0.00000
	A1	0.00195	0.00168	0.00488
	B0	0.00080	0.00099	0.00513

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)	-0.00177	-0.00180	-0.00178
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00389	-0.00402	-0.00401
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00407	-0.00410	-0.00408

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)	0.00186	0.00187	0.00180
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00399	0.00402	0.00401
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00407	0.00411	0.00409

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)	-0.00348	-0.00389	-0.00388
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00384	-0.00398	-0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00401	-0.00402	-0.00402

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)	0.00386	0.00391	0.00388
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00395	0.00400	0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00402	0.00406	0.00403

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)	-0.00333	-0.00332	-0.00338

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)	0.00337	0.00344	0.00339

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00378	0.00401	0.00414	0.00403	1.26173

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_1	0.00000	0.00216	0.00530

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)	0.06679	0.80576	11.04570
	A1->Y (FR)	0.05608	0.80141	11.20260
	B0->Y (FR)	0.03735	0.78271	11.19930
	B1->Y (FR)	0.04995	0.78938	11.04320

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)	0.05016	0.48588	6.39563
	A1->Y (RF)	0.04036	0.47159	6.34622
	B0->Y (RF)	0.03389	0.50181	6.95360
	B1->Y (RF)	0.04427	0.51982	7.07647

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	0.01532	0.01519	0.01812
	A1	0.01301	0.01309	0.01941
	B0	0.00719	0.00745	0.01429
	B1	0.01195	0.01182	0.01466

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00324	0.00294	0.00610
	A1	-0.00036	-0.00043	0.00282
	B0	-0.00039	-0.00019	0.00423
	B1	0.00132	0.00120	0.00547

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)	-0.00357	-0.00399	-0.00397
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00357	-0.00399	-0.00397
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00385	-0.00400	-0.00398
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00403	-0.00404	-0.00403

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)	0.00395	0.00399	0.00397
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00395	0.00399	0.00397
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00396	0.00400	0.00398
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00403	0.00404	0.00405

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)	-0.00174	-0.00179	-0.00175
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00174	-0.00179	-0.00175
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00382	-0.00396	-0.00394
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00399	-0.00402	-0.00400

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)	0.00183	0.00185	0.00178
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00183	0.00185	0.00178
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00392	0.00396	0.00394
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00400	0.00403	0.00401

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)	-0.00173	-0.00177	-0.00174
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00173	-0.00178	-0.00174
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00434	-0.00447	-0.00445
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00443	-0.00447	-0.00450

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)	0.00181	0.00183	0.00176
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00181	0.00183	0.00176
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00448	0.00451	0.00445
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00450	0.00459	0.00452

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)	-0.00352	-0.00391	-0.00389
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00352	-0.00391	-0.00389
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00444	-0.00457	-0.00456
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00452	-0.00454	-0.00459

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)	0.00387	0.00392	0.00389
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00387	0.00392	0.00389
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00459	0.00463	0.00457
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00458	0.00468	0.00461

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00424	0.00401	2.30973
sky130_osu_sc_15T_ls__or2_2	0.00424	0.00401	4.57943
sky130_osu_sc_15T_ls__or2_4	0.00425	0.00402	8.68086
sky130_osu_sc_15T_ls__or2_8	0.00425	0.00403	16.52494
sky130_osu_sc_15T_ls__or2_l	0.00330	0.00306	1.29712

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	0.00215	0.00283
sky130_osu_sc_15T_ls__or2_2	0.00000	0.00288	0.00548
sky130_osu_sc_15T_ls__or2_4	0.00000	0.00434	0.01077
sky130_osu_sc_15T_ls__or2_8	0.00000	0.00726	0.02137
sky130_osu_sc_15T_ls__or2_l	0.00000	0.01594	0.02102

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)	0.05099	0.45261	5.88333
	B->Y (RR)	0.04493	0.43211	5.87228
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.05632	0.39287	5.95595
	B->Y (RR)	0.04998	0.37439	5.92923
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.07390	0.38429	6.09228
	B->Y (RR)	0.06759	0.36929	6.06275
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.10728	0.42452	6.40953
	B->Y (RR)	0.10115	0.41315	6.37501
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.05524	0.52149	5.48404
	B->Y (RR)	0.04996	0.50379	5.42797

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)	0.07941	0.54914	6.77693
	B->Y (FF)	0.06489	0.53173	6.85669
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.09419	0.53141	6.93491
	B->Y (FF)	0.07981	0.52000	6.99965
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.13162	0.56193	7.17158
	B->Y (FF)	0.11730	0.55848	7.18388
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.20957	0.64841	7.41909
	B->Y (FF)	0.19530	0.64731	7.41601
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.09083	0.53794	5.64448
	B->Y (FF)	0.07455	0.53310	5.80315

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	0.00643	0.00629	0.02955
	B	0.00000	0.00000	0.00000
	B	0.00492	0.00582	0.03727
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01129	0.01123	0.03756
	B	0.00000	0.00000	0.00000
	B	0.00962	0.01093	0.04400
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02176	0.02263	0.05043
	B	0.00000	0.00000	0.00000
	B	0.02012	0.02222	0.05667
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04361	0.04535	0.07299
	B	0.00000	0.00000	0.00000
	B	0.04178	0.04540	0.07935
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00473	0.00505	0.02725
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00480	0.02959

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	0.01501	0.01487	0.03435
	B	0.00000	0.00000	0.00000
	B	0.01237	0.01398	0.05608
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01877	0.01897	0.03837
	B	0.00000	0.00000	0.00000
	B	0.01611	0.01793	0.05819
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02877	0.02863	0.04802
	B	0.00000	0.00000	0.00000
	B	0.02613	0.02754	0.06437
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.05338	0.04878	0.06729
	B	0.00000	0.00000	0.00000
	B	0.05090	0.04827	0.07950
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01123	0.01105	0.03157
	B	0.00000	0.00000	0.00000
	B	0.00942	0.01066	0.04492

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)	-0.00362	-0.00401	-0.00400
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00362	-0.00401	-0.00400
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00362	-0.00401	-0.00400
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00362	-0.00401	-0.00400
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00248	-0.00274	-0.00274

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)	0.00397	0.00403	0.00400
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00402	0.00400
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00403	0.00400
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00403	0.00400
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00272	0.00276	0.00274

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)	-0.00177	-0.00180	-0.00178
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00177	-0.00180	-0.00178
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00177	-0.00180	-0.00178
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00177	-0.00180	-0.00178
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00126	-0.00127	-0.00126

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)	0.00186	0.00188	0.00180
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00186	0.00188	0.00180
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00186	0.00188	0.00180
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00186	0.00188	0.00180
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00132	0.00127

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00416	0.00540	1.28347
sky130_osu_sc_15T_ls__tbufi_l	0.00322	0.00422	0.79435

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	0.00143	0.00530
sky130_osu_sc_15T_ls__tbufi_l	0.00000	0.01052	0.04142

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)	0.03226	0.77649	11.19430
	OE->Y (FR)	0.03787	0.34630	5.34280
	OE->Y (RR)	0.05792	0.53536	6.09753
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.04185	0.88398	11.23530
	OE->Y (FR)	0.04391	0.34615	5.34266
	OE->Y (RR)	0.06451	0.61647	5.74926

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)	0.02049	0.44810	6.39930
	OE->Y (FF)	0.03813	0.34632	5.34284
	OE->Y (RF)	0.02059	0.44144	6.26310
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.02090	0.41002	5.04559
	OE->Y (FF)	0.04419	0.34610	5.34269
	OE->Y (RF)	0.02064	0.40364	4.93319

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	0.00632	0.00660	0.01211
	OE	0.00000	0.00000	0.00000
	OE	0.00639	0.00759	0.05263
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00473	0.00492	0.01161
	OE	0.00000	0.00000	0.00000
	OE	0.00454	0.00603	0.04523

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	-0.00108	-0.00079	0.00341
	OE	0.00000	0.00000	0.00000
	OE	0.00401	0.00519	0.05773
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00066	-0.00025	0.00569
	OE	0.00000	0.00000	0.00000
	OE	0.00275	0.00425	0.05116

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)	-0.00309	-0.00311	-0.00311
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00272	-0.00276	-0.00273
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00230	-0.00232	-0.00231
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00205	-0.00208	-0.00206

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)	0.00309	0.00311	0.00311
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00278	0.00282	0.00276
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00230	0.00232	0.00231
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00209	0.00211	0.00207

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)	0.00233	0.00373	0.05785
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00210	0.00340	0.05760
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00157	0.00336	0.05093
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00139	0.00303	0.05076

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)	0.00735	0.00894	0.06263
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00756	0.00920	0.06279
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00568	0.00721	0.05425
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00586	0.00735	0.05433

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00416	0.00631	1.28344
sky130_osu_sc_15T_ls__tnbufi_l	0.00321	0.00465	0.79435

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	0.00229	0.00274
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	0.01737	0.02086

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)	0.03248	0.77641	11.19400
	OE->Y (RR)	0.02148	0.34670	5.34318
	OE->Y (FR)	0.04228	0.77958	11.04190
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.04202	0.88381	11.23500
	OE->Y (RR)	0.02050	0.34669	5.34312
	OE->Y (FR)	0.05149	0.88011	10.92480

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)	0.02018	0.44801	6.39912
	OE->Y (RF)	0.02126	0.34670	5.34323
	OE->Y (FF)	0.03976	0.44539	5.30477
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.02050	0.40987	5.04548
	OE->Y (RF)	0.02033	0.34669	5.34337
	OE->Y (FF)	0.04447	0.45053	4.77885

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	0.00652	0.00679	0.01230
	OE	0.00000	0.00000	0.00000
	OE	0.01615	0.01860	0.07230
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00493	0.00511	0.01180
	OE	0.00000	0.00000	0.00000
	OE	0.01180	0.01377	0.06047

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	-0.00134	-0.00103	0.00317
	OE	0.00000	0.00000	0.00000
	OE	0.01405	0.01639	0.05668
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00091	-0.00049	0.00545
	OE	0.00000	0.00000	0.00000
	OE	0.01021	0.01224	0.04880

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)	-0.00259	-0.00261	-0.00260
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00225	-0.00229	-0.00226
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00182	-0.00184	-0.00183
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00160	-0.00162	-0.00161

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)	0.00259	0.00261	0.00260
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00230	0.00233	0.00229
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00182	0.00184	0.00183
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00163	0.00164	0.00161

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)	-0.00484	-0.00371	0.05105
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00465	-0.00367	0.05110
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00321	-0.00172	0.04633
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00307	-0.00165	0.04636

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)	0.01210	0.01461	0.06924
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01194	0.01448	0.06910
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00885	0.01135	0.05867
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00873	0.01097	0.05859

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00825	0.00733	1.32585

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	0.00430	0.00804

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	0.07305	0.56819	6.30643
	A->Y (FR)	!B	0.04283	0.79065	11.33130
	B->Y (RR)	A	0.05833	0.55408	6.36417
	B->Y (FR)	!A	0.05841	0.79827	11.19840

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	0.06611	0.49956	5.62064
	A->Y (RF)	!B	0.02873	0.45379	6.40587
	B->Y (FF)	A	0.05850	0.49393	5.62499
	B->Y (RF)	!A	0.03537	0.46253	6.40290

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	0.00656	0.00744	0.05298
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01572	0.01786	0.07426
	B	A	0.00000	0.00000	0.00000
	B	A	0.00229	0.00365	0.05896
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01722	0.01881	0.07333

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	0.01920	0.02039	0.07183
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00425	0.00526	0.06067
	B	A	0.00000	0.00000	0.00000
	B	A	0.01771	0.02000	0.07325
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00527	0.00613	0.06091

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.00827	0.00737	1.26956

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	0.00430	0.00577

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	0.07289	0.55697	6.19328
	A->Y (FR)	B	0.05427	0.79297	11.08880
	B->Y (RR)	!A	0.06224	0.55564	6.22146
	B->Y (FR)	A	0.05945	0.79722	11.06540

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	0.06098	0.49549	5.37954
	A->Y (RF)	B	0.02853	0.45986	6.35313
	B->Y (FF)	!A	0.05605	0.48827	5.48272
	B->Y (RF)	A	0.03570	0.45744	6.23010

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	0.01870	0.02046	0.07582
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00332	0.00300	0.05503
	B	A	0.00000	0.00000	0.00000
	B	A	0.01917	0.02089	0.07468
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00206	0.00326	0.05808

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	0.00315	0.00383	0.06066
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02023	0.02215	0.06219
	B	A	0.00000	0.00000	0.00000
	B	A	0.00320	0.00385	0.05784
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01803	0.02043	0.07335

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95,
Temp -40.00

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	0.65028
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	362065.00000	724129.00000
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
	-0.00209	0.08274	1.26264

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
	6.30150	6.00281	1.53822