sky130_osu_sc_15T_ls_ff_1P95_150C.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_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.01605	0.01593	0.01231	2.47307	1.17228	2.35257
sky130_osu_sc_15T_ls__addf_l	0.01605	0.01592	0.01230	1.49632	1.16879	1.53522

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addf_1	0.00000	18.47770	21.45110
sky130_osu_sc_15T_ls__addf_l	0.00000	18.13890	21.11240

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)	0.12292	1.50344	25.14960
	B->CO (RR)	0.12262	1.47767	24.49200
	CI->CO (RR)	0.11646	1.54227	25.78620
	CON->CO (FR)	0.02030	0.62404	10.27720
sky130_osu_sc_15T_ls__addf_1	A->CO (RR)	0.12665	1.37002	18.91690
	B->CO (RR)	0.12630	1.35908	18.74600
	CI->CO (RR)	0.12015	1.41067	19.60640
	CON->CO (FR)	0.02527	0.70264	10.25260

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)	0.14398	1.70929	28.40400
	B->CO (FF)	0.12737	1.65771	27.64680
	CI->CO (FF)	0.12472	1.73124	29.01970
	CON->CO (RF)	0.02043	0.56372	9.41537
sky130_osu_sc_15T_ls__addf_1	A->CO (FF)	0.13637	1.40288	19.23540
	B->CO (FF)	0.12042	1.37258	19.05490
	CI->CO (FF)	0.11714	1.42661	19.89070
	CON->CO (RF)	0.02080	0.51927	7.57438

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)	0.11308	0.75164	9.14987
	B->CON (FR)	0.09679	0.74084	9.29791
	CI->CON (FR)	0.09383	0.77785	9.82170
sky130_osu_sc_15T_ls__addf_1	A->CON (FR)	0.10738	0.74524	9.12491
	B->CON (FR)	0.09151	0.73488	9.27546
	CI->CON (FR)	0.08809	0.77141	9.79650

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)	0.08508	0.56602	6.85047
	B->CON (RF)	0.08549	0.58613	7.15660
	CI->CON (RF)	0.07860	0.60836	7.58735
sky130_osu_sc_15T_ls__addf_1	A->CON (RF)	0.08144	0.56176	6.83083
	B->CON (RF)	0.08202	0.58232	7.13841
	CI->CON (RF)	0.07495	0.60443	7.56813

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)	0.21541	1.54592	22.74650
	B->S (-R)	0.20502	1.50020	21.85980
	CI->S (-R)	0.19469	1.56622	23.37640
	CON->S (RR)	0.06655	0.50700	6.79751
sky130_osu_sc_15T_ls__addf_1	A->S (-R)	0.20789	1.42519	18.16180
	B->S (-R)	0.19813	1.40010	17.83630
	CI->S (-R)	0.18712	1.44664	18.81180
	CON->S (RR)	0.06744	0.56778	6.79886

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)	0.19542	1.39974	20.24560
	B->S (-F)	0.18997	1.35014	19.65180
	CI->S (-F)	0.18851	1.43660	20.89460
	CON->S (FF)	0.07493	0.60043	7.81069
sky130_osu_sc_15T_ls__addf_l	A->S (-F)	0.18086	1.21060	14.97250
	B->S (-F)	0.17963	1.18224	14.81020
	CI->S (-F)	0.17392	1.24925	15.66670
	CON->S (FF)	0.06919	0.57266	6.60893

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	0.00486	0.01007	0.11802
	B	0.00546	0.01021	0.11022
	CI	0.00725	0.01271	0.12040
sky130_osu_sc_15T_ls__addf_l	A	0.00366	0.00749	0.07606
	B	0.00591	0.00908	0.07261
	CI	0.00605	0.01013	0.07825

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01683	0.02396	0.16922
	B	0.01754	0.02358	0.15415
	CI	0.01425	0.02170	0.16776
sky130_osu_sc_15T_ls__addf_l	A	0.01562	0.02071	0.11077
	B	0.01632	0.02076	0.10227
	CI	0.01304	0.01850	0.10903

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.01669	0.02129	0.10039
	B	0.01741	0.02132	0.09263
	CI	0.01413	0.01912	0.09909
sky130_osu_sc_15T_ls__addf_l	A	0.01557	0.02004	0.09551
	B	0.01628	0.02001	0.08852
	CI	0.01301	0.01782	0.09427

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00472	0.00829	0.07006
	B	0.00692	0.00999	0.06986
	CI	0.00711	0.01091	0.07371
sky130_osu_sc_15T_ls__addf_l	A	0.00356	0.00689	0.06509
	B	0.00580	0.00864	0.06506
	CI	0.00595	0.00950	0.06860

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.00056	0.00268	0.14692
	B	0.00511	0.00744	0.13969
	CI	0.00722	0.01180	0.14313
sky130_osu_sc_15T_ls__addf_l	A	-0.00114	0.00127	0.14488
	B	0.00341	0.00595	0.13992
	CI	0.00552	0.01037	0.14365

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__addf_1	A	0.03621	0.04086	0.17101
	B	0.03250	0.03757	0.16658
	CI	0.02758	0.03234	0.15339
sky130_osu_sc_15T_ls__addf_l	A	0.03458	0.03923	0.17286
	B	0.03080	0.03642	0.16893
	CI	0.02597	0.03077	0.15521

SKY130_OSU_SC_15T_LS__ADDHx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00783	0.00869	2.43825	1.27025	2.48419
sky130_osu_sc_15T_ls__addh_l	0.00783	0.00869	1.57738	1.27689	1.60144

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__addh_1	0.00000	18.75610	20.85220
sky130_osu_sc_15T_ls__addh_l	0.00000	17.56650	20.51370

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)	0.08066	0.53407	6.97474
	B->CO (RR)	0.08377	0.52236	7.00592
sky130_osu_sc_15T_ls__addh_l	A->CO (RR)	0.08299	0.59967	7.07622
	B->CO (RR)	0.08609	0.58786	7.02968

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)	0.06422	0.56216	7.64814
	B->CO (FF)	0.06909	0.57957	7.81933
sky130_osu_sc_15T_ls__addh_l	A->CO (FF)	0.05973	0.49880	5.77023
	B->CO (FF)	0.06424	0.51562	5.93757

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	0.11191	0.43404	3.72639
	A->CON (FR)	!B	0.05989	0.72095	9.66437
	B->CON (RR)	A	0.11447	0.42119	3.76217
	B->CON (FR)	!A	0.07529	0.70293	9.16666
sky130_osu_sc_15T_ls__addh_l	A->CON (RR)	B	0.10335	0.42251	3.78418
	A->CON (FR)	!B	0.05469	0.71692	9.68562
	B->CON (RR)	A	0.10594	0.41002	3.75815
	B->CON (FR)	!A	0.07008	0.69882	9.19288

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	0.10713	0.59582	6.13578
	A->CON (RF)	!B	0.04975	0.58546	7.82113
	B->CON (FF)	A	0.10291	0.62381	6.56383
	B->CON (RF)	!A	0.06138	0.57688	7.53007
sky130_osu_sc_15T_ls__addh_l	A->CON (FF)	B	0.10002	0.58363	6.11826
	A->CON (RF)	!B	0.04637	0.58298	7.84435
	B->CON (FF)	A	0.09590	0.61129	6.54488
	B->CON (RF)	!A	0.05801	0.57493	7.55261

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	0.08329	1.48443	25.48840
	A->S (FR)	B	0.14230	1.48778	23.67020
	B->S (RR)	!A	0.09630	1.45275	24.62980
	B->S (FR)	A	0.13725	1.54083	24.67610
	CON->S (FR)	-	0.02228	0.64154	10.55890
sky130_osu_sc_15T_ls__addh_l	A->S (RR)	!B	0.08403	1.37040	20.09000
	A->S (FR)	B	0.13961	1.36448	18.23880
	B->S (RR)	!A	0.09735	1.34742	19.49510
	B->S (FR)	A	0.13431	1.40940	18.98320
	CON->S (FR)	-	0.02571	0.71320	10.57980

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	0.08797	1.58325	27.10310
	A->S (RF)	B	0.13826	1.11142	16.90380
	B->S (FF)	!A	0.10338	1.57109	26.65870
	B->S (RF)	A	0.14079	1.09841	16.93050
	CON->S (RF)	-	0.01951	0.55297	9.24362
sky130_osu_sc_15T_ls__addh_l	A->S (FF)	!B	0.08170	1.34709	19.74300
	A->S (RF)	B	0.12885	0.95693	12.09060
	B->S (FF)	!A	0.09713	1.33236	19.26150
	B->S (RF)	A	0.13143	0.94431	12.05540
	CON->S (RF)	-	0.01977	0.52536	7.82515

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	0.00787	0.01081	0.06736
	B	0.00000	0.00000	0.00000
	B	0.00696	0.00977	0.07730
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00685	0.00965	0.06719
	B	0.00000	0.00000	0.00000
	B	0.00593	0.00858	0.07331

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	0.01143	0.01518	0.09583
	B	0.00000	0.00000	0.00000
	B	0.01189	0.01661	0.10382
sky130_osu_sc_15T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.01042	0.01377	0.08332
	B	0.00000	0.00000	0.00000
	B	0.01088	0.01500	0.08896

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	0.00779	0.01059	0.06391
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01033	0.01357	0.05731
	B	A	0.00000	0.00000	0.00000
	B	A	0.00688	0.00956	0.07402
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01185	0.01422	0.05673
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00676	0.00958	0.06592
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00953	0.01242	0.05073
	B	A	0.00000	0.00000	0.00000
	B	A	0.00586	0.00851	0.07249
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01105	0.01307	0.05066

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	0.01140	0.01483	0.08525
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00197	0.00479	0.04322
	B	A	0.00000	0.00000	0.00000
	B	A	0.01187	0.01615	0.09083
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00295	0.00519	0.04424
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01043	0.01374	0.08164
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00107	0.00346	0.03631
	B	A	0.00000	0.00000	0.00000
	B	A	0.01089	0.01493	0.08649
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00204	0.00398	0.03743

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	0.01153	0.01526	0.09683
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00217	0.00537	0.05375
	B	A	0.00000	0.00000	0.00000
	B	A	0.01200	0.01676	0.10481
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00314	0.00586	0.05139
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01052	0.01389	0.08413
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00121	0.00378	0.03726
	B	A	0.00000	0.00000	0.00000
	B	A	0.01099	0.01514	0.08985
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00218	0.00424	0.03757

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	0.00792	0.01084	0.06884
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01045	0.01402	0.07000
	B	A	0.00000	0.00000	0.00000
	B	A	0.00700	0.00981	0.07872
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01199	0.01496	0.06929
sky130_osu_sc_15T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00684	0.00968	0.06731
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00956	0.01248	0.05258
	B	A	0.00000	0.00000	0.00000
	B	A	0.00592	0.00859	0.07371
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01109	0.01329	0.05179

SKY130_OSU_SC_15T_LS__AND2x

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00424	0.00436	2.43022
sky130_osu_sc_15T_ls__and2_2	0.00424	0.00436	4.73462
sky130_osu_sc_15T_ls__and2_4	0.00424	0.00437	8.96056
sky130_osu_sc_15T_ls__and2_6	0.00427	0.00437	13.29986
sky130_osu_sc_15T_ls__and2_8	0.00425	0.00438	17.04693
sky130_osu_sc_15T_ls__and2_l	0.00326	0.00338	1.48984

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__and2_1	0.00000	8.57682	13.23350
sky130_osu_sc_15T_ls__and2_2	0.00000	13.21000	14.20820
sky130_osu_sc_15T_ls__and2_4	0.00000	22.82220	25.35390
sky130_osu_sc_15T_ls__and2_6	0.00000	32.43450	37.47420
sky130_osu_sc_15T_ls__and2_8	0.00000	42.04660	49.59430
sky130_osu_sc_15T_ls__and2_l	0.00000	7.44134	11.29740

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)	0.06150	0.48519	6.95018
	B->Y (RR)	0.06565	0.47006	6.58542
sky130_osu_sc_15T_ls__and2_2	A->Y (RR)	0.07132	0.43753	6.96283
	B->Y (RR)	0.07554	0.41942	6.58959
sky130_osu_sc_15T_ls__and2_4	A->Y (RR)	0.09993	0.44469	7.03115
	B->Y (RR)	0.10419	0.42236	6.65976
sky130_osu_sc_15T_ls__and2_6	A->Y (RR)	0.12999	0.47714	7.22031
	B->Y (RR)	0.13416	0.45091	6.84404
sky130_osu_sc_15T_ls__and2_8	A->Y (RR)	0.15940	0.51197	7.26774
	B->Y (RR)	0.16368	0.48268	6.88099
sky130_osu_sc_15T_ls__and2_l	A->Y (RR)	0.06427	0.53978	6.60074
	B->Y (RR)	0.06837	0.52348	6.23240

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)	0.05127	0.51066	7.23583
	B->Y (FF)	0.05384	0.52331	7.34543
sky130_osu_sc_15T_ls__and2_2	A->Y (FF)	0.05701	0.45819	7.18380
	B->Y (FF)	0.06000	0.47061	7.32332
sky130_osu_sc_15T_ls__and2_4	A->Y (FF)	0.07827	0.45661	7.13107
	B->Y (FF)	0.08091	0.46567	7.27332
sky130_osu_sc_15T_ls__and2_6	A->Y (FF)	0.10186	0.48376	7.25141
	B->Y (FF)	0.10404	0.49084	7.39132
sky130_osu_sc_15T_ls__and2_8	A->Y (FF)	0.12427	0.50913	7.15157
	B->Y (FF)	0.12622	0.51478	7.28438
sky130_osu_sc_15T_ls__and2_l	A->Y (FF)	0.05620	0.52290	6.24577
	B->Y (FF)	0.06017	0.53809	6.38618

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	0.00558	0.01512	0.19482
	B	0.00000	0.00000	0.00000
	B	0.00563	0.01286	0.15564
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01143	0.02028	0.19989
	B	0.00000	0.00000	0.00000
	B	0.01150	0.01833	0.15997
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.02613	0.03286	0.20983
	B	0.00000	0.00000	0.00000
	B	0.02631	0.03113	0.16912
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.04640	0.04762	0.22370
	B	0.00000	0.00000	0.00000
	B	0.04637	0.04577	0.17934
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.06984	0.06408	0.23758
	B	0.00000	0.00000	0.00000
	B	0.07015	0.06173	0.19057
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00407	0.01226	0.15853
	B	0.00000	0.00000	0.00000
	B	0.00412	0.01030	0.12688

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	0.01373	0.02396	0.18779
	B	0.00000	0.00000	0.00000
	B	0.01547	0.02550	0.18397
sky130_osu_sc_15T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01849	0.02849	0.19162
	B	0.00000	0.00000	0.00000
	B	0.02025	0.02980	0.18803
sky130_osu_sc_15T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.03266	0.04004	0.20086
	B	0.00000	0.00000	0.00000
	B	0.03425	0.04067	0.19714
sky130_osu_sc_15T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.04913	0.05218	0.21119
	B	0.00000	0.00000	0.00000
	B	0.05055	0.05304	0.20725
sky130_osu_sc_15T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.07019	0.06720	0.22240
	B	0.00000	0.00000	0.00000
	B	0.07131	0.06715	0.21752
sky130_osu_sc_15T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.01058	0.01890	0.14765
	B	0.00000	0.00000	0.00000
	B	0.01184	0.01975	0.14317

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)	-0.00499	-0.00499	-0.00503
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00494	-0.00495	-0.00497
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00483	-0.00484	-0.00487
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00476	-0.00477	-0.00480
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00462	-0.00463	-0.00466
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00357	-0.00357	-0.00360

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)	0.00513	0.00524	0.00516
sky130_osu_sc_15T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00519	0.00530	0.00521
sky130_osu_sc_15T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00529	0.00540	0.00531
sky130_osu_sc_15T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00543	0.00554	0.00545
sky130_osu_sc_15T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00550	0.00561	0.00552
sky130_osu_sc_15T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00368	0.00376	0.00370

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)	-0.00471	-0.00472	-0.00472
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00467	-0.00470	-0.00467
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00456	-0.00458	-0.00457
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00445	-0.00449	-0.00446
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00435	-0.00435	-0.00436
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00337	-0.00340	-0.00339

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)	0.00505	0.00489	0.00487
sky130_osu_sc_15T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00510	0.00494	0.00493
sky130_osu_sc_15T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00521	0.00504	0.00503
sky130_osu_sc_15T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00532	0.00515	0.00514
sky130_osu_sc_15T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00542	0.00526	0.00524
sky130_osu_sc_15T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00366	0.00358	0.00352

SKY130_OSU_SC_15T_LS__AOI21

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00404	0.00419	0.00406	1.11779

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__aoi21_l	0.00000	4.64547	7.71515

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)	0.06041	0.70195	9.02377
	A1->Y (FR)	0.05070	0.66392	8.64872
	B0->Y (FR)	0.04251	0.73338	9.75643

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)	0.04675	0.50104	6.32134
	A1->Y (RF)	0.04281	0.53450	6.88590
	B0->Y (RF)	0.02470	0.46568	6.17977

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	0.01257	0.01424	0.05855
	A1	0.00000	0.00000	0.00000
	A1	0.01052	0.01206	0.05430
	B0	0.00711	0.01155	0.07428

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	0.00288	0.00456	0.04325
	A1	0.00000	0.00000	0.00000
	A1	0.00297	0.00530	0.04632
	B0	-0.00104	0.00272	0.05355

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00344	-0.00429	-0.00436
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00439	-0.00442	-0.00440
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00442	-0.00445	-0.00442

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)	0.00446	0.00448	0.00449
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00450	0.00455	0.00452
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00469	0.00454	0.00450

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)	-0.00338	-0.00423	-0.00429
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00433	-0.00435	-0.00433
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00473	-0.00474	-0.00476

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)	0.00440	0.00442	0.00442
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00443	0.00446	0.00445
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00480	0.00481	0.00482

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)	-0.00163	-0.00163	-0.00163

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)	0.00186	0.00188	0.00172

SKY130_OSU_SC_15T_LS__AOI22

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_15T_ls__aoi22_1	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_15T_ls__aoi22_1	0.00404	0.00416	0.00430	0.00411	1.12743

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__aoi22_1	0.00000	4.60264	12.11830

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)	0.07340	0.70637	8.92516
	A1->Y (FR)	0.06580	0.69149	8.82122
	B0->Y (FR)	0.04357	0.71259	9.47631
	B1->Y (FR)	0.05131	0.73234	9.64337

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)	0.06261	0.52114	6.39118
	A1->Y (RF)	0.05850	0.55350	6.95544
	B0->Y (RF)	0.02958	0.52057	6.92258
	B1->Y (RF)	0.03367	0.48757	6.35807

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	0.01559	0.01716	0.06349
	A1	0.01357	0.01506	0.05968
	B0	0.00777	0.01146	0.06494
	B1	0.00977	0.01322	0.06730

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__aoi22_l	A0	0.00574	0.00743	0.04870
	A1	0.00579	0.00817	0.05144
	B0	-0.00050	0.00248	0.04468
	B1	-0.00045	0.00178	0.04148

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)	-0.00323	-0.00423	-0.00431
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00434	-0.00437	-0.00435
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00443	-0.00446	-0.00444
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00443	-0.00446	-0.00443

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)	0.00453	0.00456	0.00455
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00455	0.00460	0.00457
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00467	0.00452	0.00449
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00467	0.00452	0.00449

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)	-0.00318	-0.00417	-0.00424
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00428	-0.00429	-0.00428
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00471	-0.00475	-0.00477
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00471	-0.00474	-0.00476

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)	0.00444	0.00449	0.00448
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00447	0.00454	0.00450
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00478	0.00489	0.00480
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00478	0.00489	0.00480

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)	-0.00163	-0.00168	-0.00164
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00149	-0.00154	-0.00155
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00488	-0.00492	-0.00493
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00488	-0.00492	-0.00493

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)	0.00195	0.00197	0.00174
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00166	0.00168	0.00168
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00494	0.00497	0.00497
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00494	0.00497	0.00496

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)	-0.00166	-0.00169	-0.00166
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00151	-0.00155	-0.00156
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00451	-0.00453	-0.00452
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00451	-0.00453	-0.00452

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)	0.00197	0.00198	0.00176
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00168	0.00170	0.00170
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00475	0.00457	0.00457
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00475	0.00458	0.00457

SKY130_OSU_SC_15T_LS__BUFx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00435	2.38367
sky130_osu_sc_15T_ls__buf_2	0.00439	4.71622
sky130_osu_sc_15T_ls__buf_4	0.00438	9.08701
sky130_osu_sc_15T_ls__buf_6	0.00091	1.80000
sky130_osu_sc_15T_ls__buf_8	0.00440	17.29690
sky130_osu_sc_15T_ls__buf_l	0.00340	1.50373

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__buf_1	0.00000	7.38100	7.38107
sky130_osu_sc_15T_ls__buf_2	0.00000	10.79460	13.23380
sky130_osu_sc_15T_ls__buf_4	0.00000	17.89880	25.35420
sky130_osu_sc_15T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_15T_ls__buf_8	0.00000	32.10700	49.59500
sky130_osu_sc_15T_ls__buf_l	0.00000	7.04214	7.04225

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)**	0.04743	0.44082	6.38153
sky130_osu_sc_15T_ls__buf_2	**A->Y (RR)**	0.05452	0.38840	6.42883
sky130_osu_sc_15T_ls__buf_4	**A->Y (RR)**	0.07450	0.38698	6.55332
sky130_osu_sc_15T_ls__buf_8	**A->Y (RR)**	0.11624	0.43639	6.71790
sky130_osu_sc_15T_ls__buf_l	**A->Y (RR)**	0.05142	0.49549	6.11879

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)**	0.04813	0.50714	7.30550
sky130_osu_sc_15T_ls__buf_2	**A->Y (FF)**	0.05531	0.47041	7.56419
sky130_osu_sc_15T_ls__buf_4	**A->Y (FF)**	0.07682	0.47070	7.69487
sky130_osu_sc_15T_ls__buf_8	**A->Y (FF)**	0.12312	0.52144	7.75593
sky130_osu_sc_15T_ls__buf_l	**A->Y (FF)**	0.05353	0.52667	6.48901

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	0.00496	0.01434	0.16760
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01033	0.01915	0.16784
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.02324	0.03196	0.17923
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.05780	0.06100	0.20349
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00373	0.01163	0.14131

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	0.01302	0.02383	0.19584
sky130_osu_sc_15T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01776	0.02764	0.18265
sky130_osu_sc_15T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.03148	0.03879	0.19268
sky130_osu_sc_15T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.06824	0.06423	0.21299
sky130_osu_sc_15T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.01010	0.01863	0.15372

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
	-0.00088	-0.00089	-0.00085

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
	0.00088	0.00089	0.00085

SKY130_OSU_SC_15T_LS__DFFRx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00416	0.00410	0.01178	2.21845	2.18285
sky130_osu_sc_15T_ls__dffr_l	0.00416	0.00410	0.01178	1.50003	1.49576

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffr_1	0.00000	28.51210	43.92040
sky130_osu_sc_15T_ls__dffr_l	0.00000	28.17320	43.58120

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)	0.22828	1.18264	15.68430
	QN->Q (FR)	0.02568	0.73910	11.91450
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RR)	0.21910	1.22450	14.26490
	QN->Q (FR)	0.02807	0.77888	11.38750

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)	0.22526	1.14179	15.28530
	QN->Q (RF)	0.02268	0.61087	9.85055
	RN->Q (FF)	0.16649	1.17065	16.40650
sky130_osu_sc_15T_ls__dffr_l	CK->Q (RF)	0.22658	1.21041	14.14790
	QN->Q (RF)	0.02208	0.57471	8.37653
	RN->Q (FF)	0.16813	1.23882	15.26400

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)	0.20017	0.61819	6.32922
	RN->QN (FR)	0.14139	0.64672	7.44641
sky130_osu_sc_15T_ls__dffr_l	CK->QN (RR)	0.20144	0.68828	6.52651
	RN->QN (FR)	0.14291	0.71664	7.63840

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)**	0.19649	0.60351	5.80422
sky130_osu_sc_15T_ls__dffr_l	**CK->QN (RF)**	0.18310	0.58413	4.92843

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)	-0.06611	-0.06256	0.11693
	setup	CK (R)	0.18128	0.21133	1.53904
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.06611	-0.06256	0.11645
	setup	CK (R)	0.18228	0.21331	1.57290

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)	-0.08591	-0.23712	-0.31645
	setup	CK (R)	0.10587	0.25119	3.73607
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08702	-0.23841	-0.29169
	setup	CK (R)	0.10587	0.25119	3.73657

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)	-0.06611	-0.06256	0.11693
	setup	CK (R)	0.18128	0.21133	1.53904
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.06611	-0.06256	0.11645
	setup	CK (R)	0.18228	0.21331	1.57290

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)	-0.08591	-0.23712	-0.31645
	setup	CK (R)	0.10587	0.25119	3.73607
sky130_osu_sc_15T_ls__dffr_l	hold	CK (R)	-0.08702	-0.23841	-0.29169
	setup	CK (R)	0.10587	0.25119	3.73657

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)	0.14953	0.18729	1.19805
	removal	CK (R)	-0.03563	-0.04544	-0.13907
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.15087	0.18935	1.17108
	removal	CK (R)	-0.03563	-0.04544	-0.13907

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)	0.14953	0.18729	1.19805
	removal	CK (R)	-0.03563	-0.04544	-0.13907
sky130_osu_sc_15T_ls__dffr_l	recovery	CK (R)	0.15087	0.18935	1.17108
	removal	CK (R)	-0.03563	-0.04544	-0.13907

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 ()	0.09535	0.47241	13.33370
	min_pulse_width	RN ()	0.09179	0.47241	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	RN ()	0.09179	0.47241	13.33370
	min_pulse_width	RN ()	0.09179	0.47241	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 ()	0.11313	0.47241	13.33370
	min_pulse_width	CK ()	0.11669	0.47241	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.10602	0.47241	13.33370
	min_pulse_width	CK ()	0.11313	0.47241	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 ()	0.22697	0.47241	13.33370
	min_pulse_width	CK ()	0.08468	0.47241	13.33370
sky130_osu_sc_15T_ls__dffr_l	min_pulse_width	CK ()	0.23052	0.47241	13.33370
	min_pulse_width	CK ()	0.08468	0.47241	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	0.01446	0.02025	0.11791
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01277	0.01957	0.14124

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	0.01610	0.01715	0.05914
	RN	-0.00162	-0.11963	-2.10889
	RN	0.03570	0.03736	0.08495
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01452	0.01774	0.10157
	RN	-0.00162	-0.09459	-1.42596
	RN	0.03410	0.03798	0.12706

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	0.01601	0.01708	0.06013
	RN	-0.00162	-0.11847	-2.07467
	RN	0.03563	0.03735	0.08557
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01449	0.01773	0.10147
	RN	-0.00162	-0.09443	-1.42189
	RN	0.03408	0.03797	0.12693

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	0.01423	0.02004	0.11801
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01251	0.01938	0.13987

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	-0.00310	-0.00390	-0.00399
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01748	0.02355	0.17994
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00742	0.01356	0.16404
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00311	-0.00390	-0.00399
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01748	0.02355	0.17993
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00742	0.01356	0.16404

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	0.00477	0.00482	0.00479
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02765	0.03440	0.19383
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01342	0.01977	0.17045
sky130_osu_sc_15T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00476	0.00481	0.00479
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02764	0.03440	0.19383
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01342	0.01976	0.17045

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)	0.00489	0.01511	0.21872
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01488	0.02529	0.23989
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)	0.00489	0.01511	0.21871
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01487	0.02528	0.23989

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)	0.01278	0.02377	0.22715
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02679	0.03773	0.25245
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)	0.01277	0.02377	0.22715
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02678	0.03772	0.25244

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	0.00914	0.21332
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00865	0.01821	0.23600
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00132	0.00857	0.21208
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00086	0.00913	0.21332
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00865	0.01821	0.23600
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00133	0.00857	0.21207

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)	0.01829	0.02970	0.23381
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04188	0.05194	0.32212
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03151	0.04217	0.25774
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03989	0.06060	0.37249
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02148	0.03240	0.23522
sky130_osu_sc_15T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01829	0.02970	0.23381
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04187	0.05194	0.32212
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03151	0.04217	0.25775
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03989	0.06058	0.37249
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02147	0.03240	0.23521

SKY130_OSU_SC_15T_LS__DFFSRx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00412	0.00411	0.00907	0.01205	2.49851	2.48622
sky130_osu_sc_15T_ls__dffsr_l	0.00412	0.00411	0.00905	0.01205	1.49748	1.49510

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_15T_ls__dffsr_1	0.00000	30.50360	40.79480
sky130_osu_sc_15T_ls__dffsr_l	0.00000	30.16470	40.45570

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)	0.22987	1.20978	16.95470
	QN->Q (FR)	0.02245	0.68329	11.33760
	RN->Q (RR)	0.18475	1.17857	17.09040
	SN->Q (FR)	0.16397	1.22860	18.15400
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RR)	0.22737	1.22825	14.20010
	QN->Q (FR)	0.02808	0.77657	11.35330
	RN->Q (RR)	0.18286	1.19723	14.33270
	SN->Q (FR)	0.16212	1.24406	15.37270

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)	0.26879	1.21701	16.50160
	QN->Q (RF)	0.02237	0.64018	10.72410
	RN->Q (FF)	0.16610	1.20078	17.62300
sky130_osu_sc_15T_ls__dffsr_l	CK->Q (RF)	0.27396	1.26319	14.17710
	QN->Q (RF)	0.02204	0.57365	8.35900
	RN->Q (FF)	0.17092	1.24742	15.29110

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)	0.24327	0.66360	6.60138
	RN->QN (FR)	0.14108	0.64729	7.71748
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RR)	0.24865	0.74206	6.57868
	RN->QN (FR)	0.14571	0.72647	7.68943

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)	0.20081	0.63135	6.60346
	RN->QN (RF)	0.15735	0.60181	6.74813
	SN->QN (FF)	0.13529	0.64969	7.79376
sky130_osu_sc_15T_ls__dffsr_l	CK->QN (RF)	0.19233	0.58939	4.89152
	RN->QN (RF)	0.14959	0.56068	5.03273
	SN->QN (FF)	0.12758	0.60469	6.06555

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)	-0.06547	-0.06843	0.66894
	setup	CK (R)	0.17997	0.20994	1.15959
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.06529	-0.06584	0.66743
	setup	CK (R)	0.17915	0.21295	1.23129

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)	-0.10202	-0.25845	-0.84979
	setup	CK (R)	0.13139	0.26936	3.83131
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.10262	-0.25744	-0.90729
	setup	CK (R)	0.13131	0.26923	3.83070

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)	-0.06547	-0.06843	0.66894
	setup	CK (R)	0.17997	0.20994	1.15959
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.06529	-0.06584	0.66743
	setup	CK (R)	0.17915	0.21295	1.23129

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)	-0.10202	-0.25845	-0.84979
	setup	CK (R)	0.13139	0.26936	3.83131
sky130_osu_sc_15T_ls__dffsr_l	hold	CK (R)	-0.10262	-0.25744	-0.90729
	setup	CK (R)	0.13131	0.26923	3.83070

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)	0.12764	0.16576	1.14400
	removal	CK (R)	-0.02011	-0.02394	-0.06971
	hold	SN (R)	-0.12961	-0.24206	-0.92919
	setup	SN (R)	0.15394	0.28787	7.16144
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.12783	0.16630	1.13128
	removal	CK (R)	-0.02011	-0.02394	-0.06971
	hold	SN (R)	-0.12531	-0.23011	-0.89535
	setup	SN (R)	0.15437	0.27752	6.91855

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)	0.12764	0.16576	1.14400
	removal	CK (R)	-0.02011	-0.02394	-0.06971
	hold	SN (R)	-0.13077	-0.24206	-0.93181
	hold	SN (R)	-0.12961	-0.24387	-0.92919
	setup	SN (R)	0.15394	0.28398	6.79080
	setup	SN (R)	0.15379	0.28787	7.16144
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.12783	0.16630	1.13128
	removal	CK (R)	-0.02011	-0.02394	-0.06971
	hold	SN (R)	-0.12531	-0.23011	-0.89535
	hold	SN (R)	-0.12547	-0.23378	-0.89889
	setup	SN (R)	0.15437	0.27316	6.48066
	setup	SN (R)	0.14824	0.27752	6.91855

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 ()	0.10958	0.47241	13.33370
	min_pulse_width	RN ()	0.10958	0.47241	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	RN ()	0.10958	0.47241	13.33370
	min_pulse_width	RN ()	0.10602	0.47241	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)	0.04176	0.07083	7.70327
	removal	CK (R)	-0.02274	-0.05495	-0.34872
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04120	0.07063	7.74325
	removal	CK (R)	-0.02178	-0.05495	-0.34765

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)	0.04176	0.07083	7.70327
	removal	CK (R)	-0.02274	-0.05495	-0.34872
sky130_osu_sc_15T_ls__dffsr_l	recovery	CK (R)	0.04120	0.07063	7.74325
	removal	CK (R)	-0.02178	-0.05495	-0.34765

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 ()	0.13092	0.47241	13.33370
	min_pulse_width	SN ()	0.13092	0.47241	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	SN ()	0.13092	0.47241	13.33370
	min_pulse_width	SN ()	0.12736	0.47241	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 ()	0.10958	0.47241	13.33370
	min_pulse_width	CK ()	0.13803	0.47241	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.10602	0.47241	13.33370
	min_pulse_width	CK ()	0.13448	0.47241	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 ()	0.22341	0.47241	13.33370
	min_pulse_width	CK ()	0.11313	0.47241	13.33370
sky130_osu_sc_15T_ls__dffsr_l	min_pulse_width	CK ()	0.22341	0.47241	13.33370
	min_pulse_width	CK ()	0.11313	0.47241	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	0.01793	0.02302	0.11210
	RN	0.03150	0.03410	0.09642
	SN	-0.00162	-0.12847	-2.37513
	SN	0.03010	0.03158	0.09669
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01640	0.02291	0.14356
	RN	0.02998	0.03383	0.12866
	SN	-0.00162	-0.09450	-1.42354
	SN	0.02859	0.03154	0.12807

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	0.01893	0.02161	0.09011
	RN	-0.00162	-0.12847	-2.37511
	RN	0.03665	0.04026	0.12027
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01732	0.02052	0.10490
	RN	-0.00162	-0.09450	-1.42354
	RN	0.03506	0.03919	0.13474

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	0.01877	0.02149	0.08975
	RN	-0.00162	-0.12809	-2.36191
	RN	0.03652	0.04011	0.11988
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01727	0.02047	0.10471
	RN	-0.00162	-0.09441	-1.42126
	RN	0.03502	0.03914	0.13453

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	0.01773	0.02289	0.11178
	RN	0.03131	0.03394	0.09668
	SN	-0.00162	-0.12809	-2.36322
	SN	0.02994	0.03145	0.09681
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01616	0.02269	0.14274
	RN	0.02973	0.03362	0.12748
	SN	-0.00162	-0.09441	-1.42119
	SN	0.02839	0.03134	0.12507

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	-0.00401	-0.00406	-0.00405
	(!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)	0.02231	0.02815	0.18461
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00854	0.01451	0.16452
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00841	0.01440	0.16456
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00848	0.01447	0.16453
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00401	-0.00406	-0.00405
	(!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)	0.02231	0.02815	0.18461
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00853	0.01451	0.16452
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00841	0.01440	0.16456
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00848	0.01447	0.16453

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	0.00490	0.00480	0.00471
	(!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)	0.03185	0.03801	0.19581
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01417	0.02035	0.17079
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01451	0.02054	0.17071
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01407	0.02026	0.17070
sky130_osu_sc_15T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00489	0.00480	0.00470
	(!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)	0.03183	0.03799	0.19570
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01416	0.02034	0.17078
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01450	0.02052	0.17070
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01406	0.02025	0.17069

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)	0.00360	0.01371	0.21729
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01758	0.02790	0.24554
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)	0.00360	0.01371	0.21730
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01758	0.02791	0.24555

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)	0.01357	0.02480	0.22863
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02828	0.03930	0.25691
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)	0.01355	0.02478	0.22861
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02825	0.03929	0.25669

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)	-0.00972	-0.00975	-0.00979
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00852	-0.01017	-0.01031
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00888	-0.00975	-0.00978
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00729	0.01339	0.16190
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)	-0.00972	-0.00975	-0.00979
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00850	-0.01015	-0.01029
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00888	-0.00974	-0.00978
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00731	0.01339	0.16191

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)	0.01039	0.01036	0.01041
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01086	0.01091	0.01091
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01035	0.01044	0.01041
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02265	0.02721	0.17447
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)	0.01037	0.01036	0.01040
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01083	0.01089	0.01088
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01034	0.01043	0.01040
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02263	0.02720	0.17446

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)	-0.00088	0.00911	0.21341
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00997	0.01953	0.23691
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00954	0.01910	0.23677
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00105	0.00886	0.21248
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00550	0.02319	0.38444
sky130_osu_sc_15T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00088	0.00910	0.21341
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00995	0.01951	0.23690
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00953	0.01908	0.23676
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00105	0.00886	0.21248
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00550	0.02319	0.38444

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)	0.04717	0.05729	0.32680
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01834	0.02972	0.23396
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03222	0.04293	0.25839
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03228	0.04307	0.25836
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04394	0.06385	0.37866
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02142	0.03228	0.23525
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02501	0.04515	0.40582
sky130_osu_sc_15T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04717	0.05729	0.32680
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01833	0.02972	0.23396
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03222	0.04293	0.25839
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03228	0.04301	0.25836
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04392	0.06388	0.37864
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02141	0.03228	0.23525
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02499	0.04514	0.40581

SKY130_OSU_SC_15T_LS__DFFSx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00414	0.00723	0.01183	2.19325	2.20217
sky130_osu_sc_15T_ls__dffs_l	0.00414	0.00723	0.01183	1.50428	1.49991

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dffs_1	0.00000	26.60940	34.24330
sky130_osu_sc_15T_ls__dffs_l	0.00000	26.27060	33.90480

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)	0.18838	1.12581	15.37420
	QN->Q (FR)	0.02563	0.73253	11.75770
	SN->Q (FR)	0.14319	1.21373	17.07770
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RR)	0.18369	1.18038	14.19580
	QN->Q (FR)	0.02802	0.77624	11.36280
	SN->Q (FR)	0.13870	1.26451	15.85840

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)	0.24660	1.16151	15.10330
	QN->Q (RF)	0.02258	0.60611	9.73987
sky130_osu_sc_15T_ls__dffs_l	CK->Q (RF)	0.24694	1.23540	14.19150
	QN->Q (RF)	0.02200	0.57357	8.36674

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)	0.22111	0.64603	6.38960
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RR)	0.22162	0.71284	6.55316

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)	0.15864	0.55602	5.75424
	SN->QN (FF)	0.11313	0.64433	7.44665
sky130_osu_sc_15T_ls__dffs_l	CK->QN (RF)	0.15000	0.54108	4.84631
	SN->QN (FF)	0.10466	0.62428	6.51010

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)	-0.05179	-0.05521	0.55801
	setup	CK (R)	0.14114	0.17582	0.95229
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.05197	-0.05495	0.56576
	setup	CK (R)	0.14175	0.17688	0.89319

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)	-0.08838	-0.23942	-1.41230
	setup	CK (R)	0.11269	0.25119	3.76793
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08827	-0.23942	-1.50128
	setup	CK (R)	0.11267	0.25119	3.76785

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)	-0.05179	-0.05521	0.55801
	setup	CK (R)	0.14114	0.17582	0.95229
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.05197	-0.05495	0.56576
	setup	CK (R)	0.14175	0.17688	0.89319

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)	-0.08838	-0.23942	-1.41230
	setup	CK (R)	0.11269	0.25119	3.76793
sky130_osu_sc_15T_ls__dffs_l	hold	CK (R)	-0.08827	-0.23942	-1.50128
	setup	CK (R)	0.11267	0.25119	3.76785

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)	0.02947	0.04710	6.17084
	removal	CK (R)	-0.01496	-0.03140	-0.01362
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.02927	0.04710	6.09146
	removal	CK (R)	-0.01496	-0.03140	-0.01362

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)	0.02947	0.04710	6.17084
	removal	CK (R)	-0.01496	-0.03140	-0.01362
sky130_osu_sc_15T_ls__dffs_l	recovery	CK (R)	0.02927	0.04710	6.09146
	removal	CK (R)	-0.01496	-0.03140	-0.01362

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 ()	0.10246	0.47241	13.33370
	min_pulse_width	SN ()	0.10602	0.47241	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	SN ()	0.10246	0.47241	13.33370
	min_pulse_width	SN ()	0.09891	0.47241	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 ()	0.08823	0.47241	13.33370
	min_pulse_width	CK ()	0.12381	0.47241	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.08468	0.47241	13.33370
	min_pulse_width	CK ()	0.12025	0.47241	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 ()	0.18784	0.47241	13.33370
	min_pulse_width	CK ()	0.09535	0.47241	13.33370
sky130_osu_sc_15T_ls__dffs_l	min_pulse_width	CK ()	0.18784	0.47241	13.33370
	min_pulse_width	CK ()	0.09535	0.47241	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	0.01399	0.02002	0.11954
	SN	-0.00162	-0.11881	-2.08495
	SN	0.02444	0.02866	0.11013
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01237	0.01930	0.14053
	SN	-0.00162	-0.09475	-1.43001
	SN	0.02282	0.02810	0.13114

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	0.01614	0.01733	0.06257
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01455	0.01785	0.10305

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	0.01605	0.01722	0.06216
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01450	0.01780	0.10305

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	0.01382	0.01981	0.11834
	SN	-0.00162	-0.11910	-2.09322
	SN	0.02432	0.02855	0.10905
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01218	0.01913	0.13984
	SN	-0.00162	-0.09459	-1.42577
	SN	0.02269	0.02797	0.13020

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	-0.00411	-0.00416	-0.00415
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01648	0.02302	0.18209
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00733	0.01346	0.16408
sky130_osu_sc_15T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00411	-0.00416	-0.00416
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01648	0.02301	0.18209
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00732	0.01345	0.16407

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	0.00493	0.00483	0.00474
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02704	0.03358	0.19280
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01349	0.01989	0.17092
sky130_osu_sc_15T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00492	0.00483	0.00473
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02704	0.03358	0.19280
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01349	0.01988	0.17092

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)	-0.00709	-0.00713	-0.00712
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00581	0.01212	0.15701
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)	-0.00708	-0.00714	-0.00713
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00581	0.01212	0.15700

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)	0.00770	0.00763	0.00759
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01555	0.02208	0.16633
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)	0.00770	0.00763	0.00759
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01555	0.02208	0.16632

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)	-0.00100	0.00902	0.21346
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00124	0.00867	0.21246
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00421	0.02236	0.38466
sky130_osu_sc_15T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00100	0.00902	0.21346
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00124	0.00867	0.21245
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00421	0.02236	0.38466

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)	0.04138	0.05154	0.32326
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01821	0.02964	0.23401
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03900	0.05941	0.37228
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02142	0.03232	0.23545
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02420	0.04472	0.40654
sky130_osu_sc_15T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04138	0.05153	0.32326
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01821	0.02964	0.23401
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03899	0.05942	0.37228
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02142	0.03232	0.23544
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02419	0.04472	0.40654

SKY130_OSU_SC_15T_LS__DFFx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00430	0.01177	2.50522	2.49195
sky130_osu_sc_15T_ls__dff_l	0.00430	0.01177	1.34181	1.33847

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__dff_1	0.00000	25.41770	30.05210
sky130_osu_sc_15T_ls__dff_l	0.00000	25.07880	29.71310

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)	0.15844	1.13092	16.87710
	QN->Q (FR)	0.02231	0.68181	11.31400
sky130_osu_sc_15T_ls__dff_l	CK->Q (RR)	0.16160	1.12885	13.11420
	QN->Q (FR)	0.03150	0.82867	11.77030

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)	0.21788	1.15849	16.46500
	QN->Q (RF)	0.02229	0.63804	10.71800
sky130_osu_sc_15T_ls__dff_l	CK->Q (RF)	0.22613	1.18340	13.16830
	QN->Q (RF)	0.02214	0.54842	7.76448

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)	0.19288	0.60458	6.54129
sky130_osu_sc_15T_ls__dff_l	CK->QN (RR)	0.20133	0.69421	6.33475

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)	0.13186	0.55298	6.50569
sky130_osu_sc_15T_ls__dff_l	CK->QN (RF)	0.12768	0.49391	4.25317

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)	-0.04279	-0.04710	0.50798
	setup	CK (R)	0.11083	0.15304	0.71499
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.04228	-0.04710	0.56825
	setup	CK (R)	0.11054	0.15266	0.76309

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)	-0.07953	-0.24418	-1.74481
	setup	CK (R)	0.10094	0.25512	3.77923
sky130_osu_sc_15T_ls__dff_l	hold	CK (R)	-0.07992	-0.24391	-1.74670
	setup	CK (R)	0.10094	0.25512	3.77816

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 ()	0.07401	0.47241	13.33370
	min_pulse_width	CK ()	0.11669	0.47241	13.33370
sky130_osu_sc_15T_ls__dff_l	min_pulse_width	CK ()	0.07045	0.47241	13.33370
	min_pulse_width	CK ()	0.11313	0.47241	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 ()**	0.15582	0.47241	13.33370
	min_pulse_width	**CK ()**	0.07756	0.47241	13.33370
sky130_osu_sc_15T_ls__dff_l	**min_pulse_width**	**CK ()**	0.15582	0.47241	13.33370
	min_pulse_width	**CK ()**	0.07756	0.47241	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	0.01450	0.02015	0.11298
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01308	0.02021	0.14663

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	0.01632	0.01934	0.08962
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01472	0.01704	0.08847

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	0.01620	0.01924	0.08961
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01471	0.01702	0.08860

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	0.01436	0.02020	0.11196
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01289	0.02017	0.14466

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	-0.00322	-0.00401	-0.00410
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01530	0.02195	0.18321
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00323	-0.00401	-0.00410
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01530	0.02195	0.18322

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	0.00464	0.00470	0.00466
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02790	0.03444	0.19534
sky130_osu_sc_15T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00463	0.00470	0.00465
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02791	0.03444	0.19534

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)	-0.00101	0.00902	0.21345
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00126	0.00868	0.21243
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00102	0.00902	0.21345
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00127	0.00869	0.21243

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)	0.01808	0.02953	0.23389
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04021	0.05062	0.32399
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03963	0.06016	0.37982
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02126	0.03223	0.23528
sky130_osu_sc_15T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01808	0.02953	0.23388
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04021	0.05063	0.32397
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03964	0.06017	0.37978
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02126	0.03222	0.23528

SKY130_OSU_SC_15T_LS__INVx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00415	2.27427
sky130_osu_sc_15T_ls__inv_10	0.03845	20.24849
sky130_osu_sc_15T_ls__inv_2	0.00788	4.41244
sky130_osu_sc_15T_ls__inv_3	0.01173	6.36343
sky130_osu_sc_15T_ls__inv_4	0.01549	8.52756
sky130_osu_sc_15T_ls__inv_6	0.02322	12.68622
sky130_osu_sc_15T_ls__inv_8	0.03083	16.57207
sky130_osu_sc_15T_ls__inv_l	0.00315	1.26502

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__inv_1	0.00000	3.69044	6.26764
sky130_osu_sc_15T_ls__inv_10	0.00000	35.51910	60.59990
sky130_osu_sc_15T_ls__inv_2	0.00000	7.10392	12.12020
sky130_osu_sc_15T_ls__inv_3	0.00000	10.79430	18.38770
sky130_osu_sc_15T_ls__inv_4	0.00000	14.20780	24.24020
sky130_osu_sc_15T_ls__inv_6	0.00000	21.31160	36.36020
sky130_osu_sc_15T_ls__inv_8	0.00000	28.41540	48.48010
sky130_osu_sc_15T_ls__inv_l	0.00000	3.52094	4.53356

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)**	0.02130	0.61779	9.94860
sky130_osu_sc_15T_ls__inv_10	**A->Y (FR)**	0.03132	0.39816	9.77796
sky130_osu_sc_15T_ls__inv_2	**A->Y (FR)**	0.01764	0.52603	9.77135
sky130_osu_sc_15T_ls__inv_3	**A->Y (FR)**	0.01948	0.48994	9.80806
sky130_osu_sc_15T_ls__inv_4	**A->Y (FR)**	0.01999	0.45973	9.76359
sky130_osu_sc_15T_ls__inv_6	**A->Y (FR)**	0.02281	0.42830	9.82161
sky130_osu_sc_15T_ls__inv_8	**A->Y (FR)**	0.02671	0.40858	9.77203
sky130_osu_sc_15T_ls__inv_l	**A->Y (FR)**	0.02740	0.69608	9.73319

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)**	0.02024	0.54611	8.89937
sky130_osu_sc_15T_ls__inv_10	**A->Y (RF)**	0.02998	0.31314	8.66386
sky130_osu_sc_15T_ls__inv_2	**A->Y (RF)**	0.01673	0.45162	8.77810
sky130_osu_sc_15T_ls__inv_3	**A->Y (RF)**	0.01840	0.41539	8.83842
sky130_osu_sc_15T_ls__inv_4	**A->Y (RF)**	0.01840	0.38298	8.81070
sky130_osu_sc_15T_ls__inv_6	**A->Y (RF)**	0.02223	0.35013	8.85172
sky130_osu_sc_15T_ls__inv_8	**A->Y (RF)**	0.02587	0.32874	8.77870
sky130_osu_sc_15T_ls__inv_l	**A->Y (RF)**	0.02037	0.48240	6.70185

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	0.00666	0.01106	0.05597
sky130_osu_sc_15T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.05947	0.11860	0.53958
sky130_osu_sc_15T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.01183	0.02132	0.10898
sky130_osu_sc_15T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01813	0.03337	0.16262
sky130_osu_sc_15T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.02337	0.04413	0.21540
sky130_osu_sc_15T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.03496	0.06899	0.32106
sky130_osu_sc_15T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.04681	0.09400	0.42969
sky130_osu_sc_15T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00505	0.00878	0.05529

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	-0.00132	0.00195	0.03799
sky130_osu_sc_15T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01546	0.03156	0.37240
sky130_osu_sc_15T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00409	0.00371	0.07507
sky130_osu_sc_15T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00533	0.00631	0.11081
sky130_osu_sc_15T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00795	0.00866	0.14848
sky130_osu_sc_15T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01204	0.01638	0.21891
sky130_osu_sc_15T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01491	0.02211	0.29446
sky130_osu_sc_15T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00087	0.00211	0.04109

SKY130_OSU_SC_15T_LS__MUX2

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.34790	0.34792	0.00847	0.35069

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__mux2_1	0.00000	7.60632	7.60632

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)	-	0.01104	0.12980	1.05342
	A1->Y (RR)	-	0.01200	0.13039	1.05162
	S0->Y (RR)	(!A0 * A1)	0.03897	0.18212	0.76900
	S0->Y (FR)	(A0 * !A1)	0.02803	0.26591	2.48029

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)	-	0.01072	0.14130	1.14851
	A1->Y (FF)	-	0.01020	0.14029	1.14458
	S0->Y (FF)	(!A0 * A1)	0.04525	0.26923	2.01073
	S0->Y (RF)	(A0 * !A1)	0.02357	0.20143	1.46994

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	-	-0.00676	-0.00677	-0.00678
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00435	-0.00436	-0.00436
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00769	0.01987	0.22349
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00458	0.00638	0.20892

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	-	0.00681	0.00683	0.00683
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00465	0.00466	0.00466
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00125	0.01284	0.21619
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01810	0.02945	0.23178

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)	-0.00155	-0.00155	-0.00155

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)	0.00166	0.00165	0.00166

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)	-0.00191	-0.00191	-0.00190

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)	0.00192	0.00192	0.00192

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)	-0.00170	0.00961	0.21244
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00166	0.00966	0.21276

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)	0.01375	0.02528	0.22783
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01207	0.02429	0.22737

SKY130_OSU_SC_15T_LS__NAND2x

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00415	0.00413	1.66776
sky130_osu_sc_15T_ls__nand2_l	0.00315	0.00316	1.26688

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nand2_1	0.00000	3.59762	12.12000
sky130_osu_sc_15T_ls__nand2_l	0.00000	3.41374	8.78849

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)	0.02217	0.56005	8.31980
	B->Y (FR)	0.02598	0.55634	8.19991
sky130_osu_sc_15T_ls__nand2_l	A->Y (FR)	0.02843	0.69793	9.73870
	B->Y (FR)	0.03421	0.70132	9.72278

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)	0.02884	0.61879	9.24750
	B->Y (RF)	0.03277	0.58890	8.74579
sky130_osu_sc_15T_ls__nand2_l	A->Y (RF)	0.02840	0.61592	8.53190
	B->Y (RF)	0.03177	0.58626	8.02367

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	0.00712	0.01128	0.05548
	B	0.00000	0.00000	0.00000
	B	0.00917	0.01320	0.06075
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00535	0.00825	0.04671
	B	0.00000	0.00000	0.00000
	B	0.00686	0.00989	0.05020

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	-0.00066	0.00213	0.03822
	B	0.00000	0.00000	0.00000
	B	-0.00066	0.00158	0.03631
sky130_osu_sc_15T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00045	0.00175	0.03436
	B	0.00000	0.00000	0.00000
	B	-0.00045	0.00149	0.03324

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)	-0.00494	-0.00497	-0.00498
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00347	-0.00347	-0.00350

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)	0.00498	0.00509	0.00500
sky130_osu_sc_15T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00350	0.00358	0.00352

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)	-0.00458	-0.00461	-0.00459
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00321	-0.00324	-0.00322

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)	0.00481	0.00463	0.00463
sky130_osu_sc_15T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00342	0.00334	0.00328

SKY130_OSU_SC_15T_LS__NOR2x

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00413	0.00441	1.26933
sky130_osu_sc_15T_ls__nor2_l	0.00306	0.00337	0.80875

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__nor2_1	0.00000	3.25181	6.26700
sky130_osu_sc_15T_ls__nor2_l	0.00000	3.39777	4.91176

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)	0.04401	0.67749	9.24388
	B->Y (FR)	0.03225	0.70133	9.74779
sky130_osu_sc_15T_ls__nor2_l	A->Y (FR)	0.05153	0.76753	9.23371
	B->Y (FR)	0.04071	0.79424	9.82189

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)	0.02910	0.44498	5.99224
	B->Y (RF)	0.02193	0.43338	5.96706
sky130_osu_sc_15T_ls__nor2_l	A->Y (RF)	0.02685	0.40845	4.79710
	B->Y (RF)	0.02187	0.39859	4.76775

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	0.01018	0.01228	0.05921
	B	0.00000	0.00000	0.00000
	B	0.00728	0.01114	0.06428
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00732	0.00956	0.05760
	B	0.00000	0.00000	0.00000
	B	0.00549	0.00823	0.05846

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	0.00120	0.00401	0.04990
	B	0.00000	0.00000	0.00000
	B	-0.00095	0.00239	0.04581
sky130_osu_sc_15T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00074	0.00334	0.05007
	B	0.00000	0.00000	0.00000
	B	-0.00056	0.00244	0.04584

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)	-0.00347	-0.00428	-0.00433
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00243	-0.00291	-0.00294

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)	0.00445	0.00451	0.00448
sky130_osu_sc_15T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00303	0.00306	0.00304

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)	-0.00165	-0.00166	-0.00165
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00115	-0.00115	-0.00115

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)	0.00177	0.00178	0.00170
sky130_osu_sc_15T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00124	0.00124	0.00119

SKY130_OSU_SC_15T_LS__OAI21

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00416	0.00426	0.00354	1.21156

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai21_l	0.00000	3.75158	10.80020

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)	0.04532	0.71437	9.63385
	A1->Y (FR)	0.06003	0.69623	9.16214
	B0->Y (FR)	0.03256	0.65661	9.01199

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)	0.04001	0.53375	7.05309
	A1->Y (RF)	0.04972	0.53021	6.86420
	B0->Y (RF)	0.03074	0.57654	7.89334

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	0.01030	0.01319	0.05732
	A1	0.00000	0.00000	0.00000
	A1	0.01317	0.01492	0.05640
	B0	0.00591	0.00902	0.05274

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	0.00041	0.00227	0.03735
	A1	0.00000	0.00000	0.00000
	A1	0.00261	0.00420	0.04106
	B0	0.00095	0.00359	0.03996

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)	-0.00161	-0.00165	-0.00162
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00441	-0.00444	-0.00443
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00446	-0.00448	-0.00447

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)	0.00181	0.00183	0.00174
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00441	0.00444	0.00443
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00469	0.00452	0.00451

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)	-0.00331	-0.00412	-0.00420
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00436	-0.00440	-0.00439
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00440	-0.00443	-0.00441

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)	0.00440	0.00445	0.00443
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00436	0.00440	0.00439
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00462	0.00445	0.00445

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)	-0.00356	-0.00356	-0.00363

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)	0.00364	0.00366	0.00366

SKY130_OSU_SC_15T_LS__OAI22

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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_l	12.82050

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_15T_ls__oai22_l	0.00405	0.00426	0.00437	0.00428	1.25259

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__oai22_l	0.00000	4.63882	12.13190

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)	0.06461	0.69550	9.17057
	A1->Y (FR)	0.05285	0.71786	9.68675
	B0->Y (FR)	0.03552	0.70144	9.67571
	B1->Y (FR)	0.04821	0.67807	9.16264

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)	0.07138	0.57916	7.32378
	A1->Y (RF)	0.05657	0.56089	7.25425
	B0->Y (RF)	0.04826	0.60640	8.10423
	B1->Y (RF)	0.06348	0.62947	8.21807

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	0.01576	0.01753	0.05925
	A1	0.01286	0.01606	0.06509
	B0	0.00771	0.01113	0.05902
	B1	0.01078	0.01231	0.05317

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	A0	0.00187	0.00346	0.04074
	A1	-0.00021	0.00167	0.03749
	B0	-0.00017	0.00267	0.04164
	B1	0.00189	0.00406	0.04335

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)	-0.00346	-0.00428	-0.00433
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00343	-0.00425	-0.00430
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00437	-0.00440	-0.00439
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00441	-0.00444	-0.00442

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)	0.00446	0.00451	0.00448
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00449	0.00454	0.00451
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00439	0.00444	0.00441
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00471	0.00456	0.00447

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)	-0.00163	-0.00164	-0.00163
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00160	-0.00161	-0.00160
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00433	-0.00436	-0.00436
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00438	-0.00439	-0.00438

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)	0.00176	0.00177	0.00168
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00179	0.00180	0.00171
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00435	0.00439	0.00437
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00467	0.00451	0.00444

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)	-0.00160	-0.00163	-0.00161
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00158	-0.00159	-0.00158
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00485	-0.00488	-0.00488
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00478	-0.00481	-0.00489

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_15T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00173	0.00173	0.00167
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00176	0.00177	0.00170
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00496	0.00498	0.00490
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00491	0.00493	0.00493

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)	-0.00339	-0.00420	-0.00425
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00337	-0.00417	-0.00422
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00495	-0.00498	-0.00497
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00488	-0.00489	-0.00499

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)	0.00438	0.00444	0.00440
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00441	0.00445	0.00443
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00505	0.00506	0.00500
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00500	0.00511	0.00502

SKY130_OSU_SC_15T_LS__OR2x

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00449	0.00425	2.39187
sky130_osu_sc_15T_ls__or2_2	0.00449	0.00426	4.66152
sky130_osu_sc_15T_ls__or2_4	0.00450	0.00426	8.91217
sky130_osu_sc_15T_ls__or2_8	0.00450	0.00427	16.95543
sky130_osu_sc_15T_ls__or2_l	0.00347	0.00322	1.33900

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__or2_1	0.00000	5.65966	8.35572
sky130_osu_sc_15T_ls__or2_2	0.00000	7.85377	14.20870
sky130_osu_sc_15T_ls__or2_4	0.00000	12.44980	26.32970
sky130_osu_sc_15T_ls__or2_8	0.00000	21.64190	50.57170
sky130_osu_sc_15T_ls__or2_l	0.00000	6.41829	9.44640

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)	0.06027	0.46762	6.30476
	B->Y (RR)	0.05064	0.43941	6.15555
sky130_osu_sc_15T_ls__or2_2	A->Y (RR)	0.06673	0.40991	6.25225
	B->Y (RR)	0.05678	0.38286	6.09342
sky130_osu_sc_15T_ls__or2_4	A->Y (RR)	0.08716	0.40644	6.36661
	B->Y (RR)	0.07692	0.38261	6.20629
sky130_osu_sc_15T_ls__or2_8	A->Y (RR)	0.12920	0.45373	6.57506
	B->Y (RR)	0.11865	0.43450	6.42659
sky130_osu_sc_15T_ls__or2_l	A->Y (RR)	0.06256	0.51856	5.69503
	B->Y (RR)	0.05446	0.49262	5.50388

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)	0.08313	0.57022	7.71360
	B->Y (FF)	0.06777	0.57708	8.07118
sky130_osu_sc_15T_ls__or2_2	A->Y (FF)	0.09715	0.52404	7.72864
	B->Y (FF)	0.08194	0.53433	8.07867
sky130_osu_sc_15T_ls__or2_4	A->Y (FF)	0.13662	0.53615	7.85638
	B->Y (FF)	0.12148	0.55275	8.18514
sky130_osu_sc_15T_ls__or2_8	A->Y (FF)	0.21910	0.61239	7.94276
	B->Y (FF)	0.20398	0.63627	8.25777
sky130_osu_sc_15T_ls__or2_l	A->Y (FF)	0.09266	0.55692	6.22010
	B->Y (FF)	0.07590	0.56890	6.58275

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	0.00749	0.01390	0.13660
	B	0.00000	0.00000	0.00000
	B	0.00554	0.01344	0.14832
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01314	0.01999	0.14418
	B	0.00000	0.00000	0.00000
	B	0.01097	0.01913	0.15442
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02639	0.03301	0.15688
	B	0.00000	0.00000	0.00000
	B	0.02398	0.03221	0.16709
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.06166	0.06181	0.18325
	B	0.00000	0.00000	0.00000
	B	0.05876	0.06260	0.19280
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00548	0.01093	0.10472
	B	0.00000	0.00000	0.00000
	B	0.00417	0.01028	0.10646

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	0.01682	0.02257	0.14713
	B	0.00000	0.00000	0.00000
	B	0.01356	0.02282	0.18608
sky130_osu_sc_15T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.02242	0.02704	0.15124
	B	0.00000	0.00000	0.00000
	B	0.01916	0.02702	0.18840
sky130_osu_sc_15T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.04021	0.03866	0.16006
	B	0.00000	0.00000	0.00000
	B	0.03692	0.03869	0.19481
sky130_osu_sc_15T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.09274	0.06760	0.17997
	B	0.00000	0.00000	0.00000
	B	0.08937	0.06752	0.21134
sky130_osu_sc_15T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.01253	0.01737	0.12539
	B	0.00000	0.00000	0.00000
	B	0.01034	0.01718	0.14206

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)	-0.00347	-0.00428	-0.00435
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00346	-0.00427	-0.00434
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00344	-0.00426	-0.00432
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00340	-0.00422	-0.00428
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00241	-0.00290	-0.00295

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)	0.00448	0.00455	0.00451
sky130_osu_sc_15T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00450	0.00456	0.00452
sky130_osu_sc_15T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00451	0.00458	0.00454
sky130_osu_sc_15T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00454	0.00461	0.00457
sky130_osu_sc_15T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00308	0.00310	0.00309

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)	-0.00164	-0.00168	-0.00165
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00163	-0.00168	-0.00164
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00162	-0.00166	-0.00162
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00158	-0.00162	-0.00158
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00115	-0.00118	-0.00116

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)	0.00179	0.00181	0.00172
sky130_osu_sc_15T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00180	0.00182	0.00172
sky130_osu_sc_15T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00182	0.00184	0.00174
sky130_osu_sc_15T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00185	0.00187	0.00178
sky130_osu_sc_15T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00129	0.00130	0.00124

SKY130_OSU_SC_15T_LS__TBUFIx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00439	0.00566	1.27863
sky130_osu_sc_15T_ls__tbufi_l	0.00337	0.00439	0.80551

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tbufi_1	0.00000	4.32137	12.53440
sky130_osu_sc_15T_ls__tbufi_l	0.00000	4.68660	9.06653

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)	0.03099	0.69540	9.68761
	OE->Y (FR)	0.03862	0.36965	5.34286
	OE->Y (RR)	0.06280	0.53472	6.23150
sky130_osu_sc_15T_ls__tbufi_l	A->Y (FR)	0.03954	0.79221	9.74366
	OE->Y (FR)	0.04430	0.36952	5.34271
	OE->Y (RR)	0.06788	0.60038	5.82867

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)	0.02840	0.55566	7.68938
	OE->Y (FF)	0.03927	0.36966	5.34286
	OE->Y (RF)	0.02635	0.51298	7.03212
sky130_osu_sc_15T_ls__tbufi_l	A->Y (RF)	0.02830	0.50910	6.14161
	OE->Y (FF)	0.04482	0.36950	5.34269
	OE->Y (RF)	0.02603	0.46351	5.43946

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	0.00701	0.01029	0.05421
	OE	0.00000	0.00000	0.00000
	OE	0.00747	0.01799	0.20006
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00527	0.00814	0.05008
	OE	0.00000	0.00000	0.00000
	OE	0.00529	0.01418	0.16192

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	-0.00081	0.00195	0.03837
	OE	0.00000	0.00000	0.00000
	OE	0.00466	0.01593	0.21745
sky130_osu_sc_15T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00048	0.00199	0.03866
	OE	0.00000	0.00000	0.00000
	OE	0.00315	0.01275	0.17794

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)	-0.00320	-0.00321	-0.00321
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00261	-0.00264	-0.00262
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00239	-0.00241	-0.00240
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00197	-0.00199	-0.00197

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)	0.00320	0.00321	0.00321
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00270	0.00274	0.00268
sky130_osu_sc_15T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00239	0.00241	0.00240
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00207	0.00209	0.00204

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)	0.00289	0.01486	0.22074
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00248	0.01420	0.22028
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00193	0.01205	0.17960
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00169	0.01158	0.17925

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)	0.00820	0.02043	0.22560
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00813	0.02034	0.22562
sky130_osu_sc_15T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00624	0.01637	0.18338
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00626	0.01635	0.18340

SKY130_OSU_SC_15T_LS__TNBUFIx

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00439	0.00678	1.27861
sky130_osu_sc_15T_ls__tnbufi_l	0.00337	0.00496	0.80545

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__tnbufi_1	0.00000	6.03953	7.38020
sky130_osu_sc_15T_ls__tnbufi_l	0.00000	5.36171	7.04134

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)	0.03116	0.69539	9.68682
	OE->Y (RR)	0.02721	0.37026	5.34349
	OE->Y (FR)	0.04132	0.66525	9.02678
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (FR)	0.03973	0.79204	9.74018
	OE->Y (RR)	0.02569	0.37024	5.34348
	OE->Y (FR)	0.04939	0.75170	8.88732

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)	0.02798	0.55552	7.68958
	OE->Y (RF)	0.02684	0.37029	5.34350
	OE->Y (FF)	0.04452	0.49427	6.01805
sky130_osu_sc_15T_ls__tnbufi_l	A->Y (RF)	0.02783	0.50893	6.14199
	OE->Y (RF)	0.02546	0.37025	5.34350
	OE->Y (FF)	0.04835	0.49554	5.23854

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	0.00707	0.01038	0.05427
	OE	0.00000	0.00000	0.00000
	OE	0.01772	0.03046	0.23356
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00541	0.00827	0.04990
	OE	0.00000	0.00000	0.00000
	OE	0.01293	0.02326	0.18752

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	-0.00119	0.00159	0.03799
	OE	0.00000	0.00000	0.00000
	OE	0.01520	0.02702	0.20480
sky130_osu_sc_15T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00078	0.00171	0.03842
	OE	0.00000	0.00000	0.00000
	OE	0.01099	0.02076	0.17056

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)	-0.00272	-0.00274	-0.00273
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00209	-0.00212	-0.00210
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00192	-0.00193	-0.00192
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00150	-0.00150	-0.00149

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)	0.00272	0.00274	0.00273
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00227	0.00230	0.00225
sky130_osu_sc_15T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00192	0.00193	0.00192
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00162	0.00163	0.00160

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)	-0.00494	0.00681	0.21311
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00509	0.00670	0.21312
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00328	0.00672	0.17449
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00335	0.00669	0.17452

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)	0.01319	0.02667	0.23300
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01295	0.02632	0.23284
sky130_osu_sc_15T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00958	0.02039	0.18827
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00947	0.02031	0.18823

SKY130_OSU_SC_15T_LS__XNOR2

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00873	0.00783	1.31291

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xnor2_l	0.00000	13.31090	19.53180

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	0.07864	0.56344	6.39174
	A->Y (FR)	!B	0.04074	0.70547	9.76144
	B->Y (RR)	A	0.06275	0.55339	6.55731
	B->Y (FR)	!A	0.05605	0.68888	9.29848

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	0.08011	0.55918	6.42255
	A->Y (RF)	!B	0.03836	0.53772	7.32988
	B->Y (FF)	A	0.06697	0.54815	6.43712
	B->Y (RF)	!A	0.04961	0.54985	7.31928

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	0.00802	0.01813	0.20353
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01693	0.03139	0.27623
	B	A	0.00000	0.00000	0.00000
	B	A	0.00254	0.01440	0.22335
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01901	0.03227	0.26802

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	0.02134	0.03205	0.23516
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00505	0.01792	0.25389
	B	A	0.00000	0.00000	0.00000
	B	A	0.01947	0.03148	0.23995
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00635	0.01907	0.25197

SKY130_OSU_SC_15T_LS__XOR2

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.00875	0.00788	1.29180

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_15T_ls__xor2_l	0.00000	13.31090	20.19780

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	0.07582	0.56063	6.52971
	A->Y (FR)	B	0.05328	0.69274	9.39240
	B->Y (RR)	!A	0.06592	0.56006	6.57068
	B->Y (FR)	A	0.05755	0.69505	9.34847

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	0.06869	0.54642	6.17047
	A->Y (RF)	B	0.04239	0.57364	7.73101
	B->Y (FF)	!A	0.06490	0.54731	6.38364
	B->Y (RF)	A	0.04933	0.54770	7.23609

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	0.02061	0.03401	0.27227
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00369	0.01341	0.21405
	B	A	0.00000	0.00000	0.00000
	B	A	0.02125	0.03453	0.26671
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00218	0.01364	0.22047

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	0.00417	0.01713	0.25373
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02193	0.03287	0.20953
	B	A	0.00000	0.00000	0.00000
	B	A	0.00424	0.01640	0.24518
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01974	0.03184	0.23814

SKY130_OSU_SC_15T_LS_x

sky130_osu_sc_15T_ls_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95,
Temp 150.00

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	0.87889
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	386754.00000	773509.00000
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
	-0.00140	0.11945	1.69256

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
	6.73061	6.41224	1.98671