sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_LS__ADDFx
SKY130_OSU_SC_18T_LS__ADDHx
SKY130_OSU_SC_18T_LS__AND2x
SKY130_OSU_SC_18T_LS__AOI21
SKY130_OSU_SC_18T_LS__AOI22
SKY130_OSU_SC_18T_LS__BUFx
SKY130_OSU_SC_18T_LS__DFFRx
SKY130_OSU_SC_18T_LS__DFFSRx
SKY130_OSU_SC_18T_LS__DFFSx
SKY130_OSU_SC_18T_LS__DFFx
SKY130_OSU_SC_18T_LS__INVx
SKY130_OSU_SC_18T_LS__MUX2
SKY130_OSU_SC_18T_LS__NAND2x
SKY130_OSU_SC_18T_LS__NOR2x
SKY130_OSU_SC_18T_LS__OAI21
SKY130_OSU_SC_18T_LS__OAI22
SKY130_OSU_SC_18T_LS__OR2x
SKY130_OSU_SC_18T_LS__TBUFIx
SKY130_OSU_SC_18T_LS__TNBUFIx
SKY130_OSU_SC_18T_LS__XNOR2
SKY130_OSU_SC_18T_LS__XOR2
SKY130_OSU_SC_18T_LS_x

SKY130_OSU_SC_18T_LS__ADDFx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__addf_1	46.88640
sky130_osu_sc_18T_ls__addf_l	46.88640

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_18T_ls__addf_1	0.01942	0.01953	0.01526	0.27011	0.09522	0.26615
sky130_osu_sc_18T_ls__addf_l	0.01942	0.01953	0.01527	0.19522	0.09638	0.19337

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	0.00024	0.00026
sky130_osu_sc_18T_ls__addf_l	0.00000	0.00024	0.00025

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.56908	2.84498	17.74410
	B->CO (RR)	0.54618	2.77087	17.44700
	CI->CO (RR)	0.55189	2.83885	17.91530
	CON->CO (FR)	0.20661	1.84691	14.08160
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.58377	2.84248	16.30640
	B->CO (RR)	0.54970	2.75887	16.15180
	CI->CO (RR)	0.56657	2.83677	16.50550
	CON->CO (FR)	0.24256	2.00606	14.07970

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	2.24557	7.69827	40.98450
	B->CO (FF)	2.10663	7.46371	40.33670
	CI->CO (FF)	2.07206	7.44537	40.38480
	CON->CO (RF)	0.05256	0.74153	6.76451
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	2.20481	6.97957	33.36200
	B->CO (FF)	2.06260	6.76537	32.84980
	CI->CO (FF)	2.03125	6.68576	32.76350
	CON->CO (RF)	0.05968	0.78590	6.95858

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CON (FR)	1.58043	3.58476	14.96120
	B->CON (FR)	1.46224	3.42653	14.71860
	CI->CON (FR)	1.40662	3.31287	14.35590
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	1.50233	3.51648	14.96390
	B->CON (FR)	1.38628	3.36053	14.71700
	CI->CON (FR)	1.32876	3.24668	14.35640

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->CON (RF)	0.19841	0.84421	5.87232
	B->CON (RF)	0.17633	0.81548	5.83046
	CI->CON (RF)	0.18119	0.83799	5.90103
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.18983	0.83701	5.87432
	B->CON (RF)	0.16850	0.80980	5.83220
	CI->CON (RF)	0.17260	0.83092	5.90348

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->S (-R)	2.88377	8.57301	41.40540
	B->S (-R)	2.74934	8.38093	40.96250
	CI->S (-R)	2.70097	8.30177	40.76920
	CON->S (RR)	0.38945	1.95010	11.15210
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	2.73860	7.80343	34.60600
	B->S (-R)	2.60805	7.62930	34.24070
	CI->S (-R)	2.55536	7.49537	33.93260
	CON->S (RR)	0.40891	2.08710	11.03480

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addf_1	A->S (-F)	1.50146	2.98584	12.81570
	B->S (-F)	1.71338	3.14131	12.66470
	CI->S (-F)	1.48207	2.97511	12.96930
	CON->S (FF)	0.85406	1.69834	9.05221
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	1.39670	2.76526	11.44490
	B->S (-F)	1.60991	2.91520	11.36020
	CI->S (-F)	1.37692	2.75363	11.62830
	CON->S (FF)	0.79727	1.66300	8.99320

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00234	0.00231	0.00222
	B	0.00273	0.00279	0.00270
	CI	0.00299	0.00305	0.00299
sky130_osu_sc_18T_ls__addf_l	A	0.00179	0.00174	0.00164
	B	0.00219	0.00221	0.00208
	CI	0.00244	0.00247	0.00240

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00872	0.00871	0.00867
	B	0.00860	0.00860	0.00852
	CI	0.00749	0.00763	0.00757
sky130_osu_sc_18T_ls__addf_l	A	0.00819	0.00816	0.00811
	B	0.00806	0.00804	0.00796
	CI	0.00695	0.00706	0.00701

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00872	0.00870	0.00866
	B	0.00859	0.00857	0.00845
	CI	0.00749	0.00756	0.00755
sky130_osu_sc_18T_ls__addf_l	A	0.00819	0.00815	0.00811
	B	0.00806	0.00802	0.00790
	CI	0.00694	0.00702	0.00700

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00230	0.00229	0.00215
	B	0.00269	0.00274	0.00255
	CI	0.00297	0.00303	0.00294
sky130_osu_sc_18T_ls__addf_l	A	0.00176	0.00172	0.00152
	B	0.00216	0.00217	0.00195
	CI	0.00243	0.00246	0.00235

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00873	0.00872	0.00867
	B	0.00860	0.00860	0.00853
	CI	0.00750	0.00764	0.00759
sky130_osu_sc_18T_ls__addf_l	A	0.00819	0.00817	0.00813
	B	0.00807	0.00805	0.00797
	CI	0.00696	0.00707	0.00704

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01812	0.01820	0.01815
	B	0.01664	0.01652	0.01626
	CI	0.01452	0.01454	0.01450
sky130_osu_sc_18T_ls__addf_l	A	0.01737	0.01738	0.01728
	B	0.01590	0.01570	0.01543
	CI	0.01379	0.01376	0.01369

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__addh_1	27.83880
sky130_osu_sc_18T_ls__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_ls__addh_1	0.00971	0.01042	0.26991	0.10205	0.26917
sky130_osu_sc_18T_ls__addh_l	0.00971	0.01042	0.15806	0.10397	0.15509

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	0.00019	0.00022
sky130_osu_sc_18T_ls__addh_l	0.00000	0.00020	0.00023

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CO (RR)	0.44968	1.96837	11.03810
	B->CO (RR)	0.45667	1.96909	11.21050
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.51100	2.28617	11.23760
	B->CO (RR)	0.51799	2.28896	11.43310

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CO (FF)	0.67508	1.53409	8.95809
	B->CO (FF)	0.71276	1.57176	9.01845
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.64519	1.51309	8.84736
	B->CO (FF)	0.68297	1.55527	8.91145

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CON (RR)	B	0.71520	1.72630	6.96203
	A->CON (FR)	!B	1.01767	2.95073	14.30010
	B->CON (RR)	A	0.72342	1.72736	7.13506
	B->CON (FR)	!A	1.15010	3.18303	14.84530
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.64051	1.65596	6.83342
	A->CON (FR)	!B	0.90966	2.86026	14.27410
	B->CON (RR)	A	0.64878	1.65850	7.02216
	B->CON (FR)	!A	1.04203	3.08985	14.86300

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->CON (FF)	B	0.81631	1.59826	8.64373
	A->CON (RF)	!B	0.12975	0.78576	5.87103
	B->CON (FF)	A	0.85290	1.64476	8.74654
	B->CON (RF)	!A	0.13983	0.79259	5.82470
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.71765	1.50036	8.49994
	A->CON (RF)	!B	0.11875	0.77635	5.87715
	B->CON (FF)	A	0.75374	1.55130	8.60985
	B->CON (RF)	!A	0.12911	0.78385	5.83099

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->S (RR)	!B	0.45865	2.69599	17.60370
	A->S (FR)	B	1.15887	3.49249	19.68570
	B->S (RR)	!A	0.46631	2.66607	17.31370
	B->S (FR)	A	1.20068	3.57652	20.05370
	CON->S (FR)	-	0.21446	1.86423	14.15860
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.50991	2.78129	15.72520
	A->S (FR)	B	1.12413	3.50394	17.73420
	B->S (RR)	!A	0.52020	2.76653	15.57160
	B->S (FR)	A	1.16339	3.57660	17.96770
	CON->S (FR)	-	0.29453	2.19667	14.38940

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__addh_1	A->S (FF)	!B	1.56033	6.72356	38.98120
	A->S (RF)	B	1.01802	3.57847	18.61340
	B->S (FF)	!A	1.69271	6.93821	39.55450
	B->S (RF)	A	1.02617	3.57792	18.78100
	CON->S (RF)	-	0.04977	0.73184	6.70033
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	1.46582	5.48179	27.11710
	A->S (RF)	B	0.95114	3.03303	13.31200
	B->S (FF)	!A	1.59770	5.72047	27.67100
	B->S (RF)	A	0.95992	3.03553	13.50360
	CON->S (RF)	-	0.06027	0.78457	6.82207

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00394	0.00385	0.00371
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00364	0.00349
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00318	0.00306	0.00290
	B	0.00000	0.00000	0.00000
	B	0.00295	0.00283	0.00268

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00623	0.00616	0.00577
	B	0.00000	0.00000	0.00000
	B	0.00650	0.00652	0.00617
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00548	0.00538	0.00511
	B	0.00000	0.00000	0.00000
	B	0.00574	0.00573	0.00548

Internal switching power(pJ) to CON rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00393	0.00383	0.00368
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00543	0.00535	0.00533
	B	A	0.00000	0.00000	0.00000
	B	A	0.00370	0.00362	0.00346
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00578	0.00571	0.00569
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00317	0.00305	0.00289
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00491	0.00482	0.00465
	B	A	0.00000	0.00000	0.00000
	B	A	0.00294	0.00283	0.00267
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00526	0.00518	0.00516

Internal switching power(pJ) to CON falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00623	0.00618	0.00597
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00099	0.00100	0.00093
	B	A	0.00000	0.00000	0.00000
	B	A	0.00649	0.00651	0.00634
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00148	0.00144	0.00136
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00548	0.00539	0.00514
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00035	0.00036	0.00018
	B	A	0.00000	0.00000	0.00000
	B	A	0.00573	0.00573	0.00551
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00085	0.00080	0.00060

Internal switching power(pJ) to S rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00625	0.00618	0.00609
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00100	0.00103	0.00098
	B	A	0.00000	0.00000	0.00000
	B	A	0.00650	0.00652	0.00647
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00150	0.00148	0.00144
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00549	0.00539	0.00532
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00036	0.00036	0.00027
	B	A	0.00000	0.00000	0.00000
	B	A	0.00574	0.00573	0.00568
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00087	0.00082	0.00074

Internal switching power(pJ) to S falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00393	0.00385	0.00370
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00543	0.00542	0.00536
	B	A	0.00000	0.00000	0.00000
	B	A	0.00370	0.00364	0.00349
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00577	0.00574	0.00573
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00317	0.00305	0.00289
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00491	0.00487	0.00481
	B	A	0.00000	0.00000	0.00000
	B	A	0.00294	0.00282	0.00267
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00526	0.00519	0.00516

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__and2_1	12.45420
sky130_osu_sc_18T_ls__and2_2	15.38460
sky130_osu_sc_18T_ls__and2_4	21.24540
sky130_osu_sc_18T_ls__and2_6	27.10620
sky130_osu_sc_18T_ls__and2_8	32.96700
sky130_osu_sc_18T_ls__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__and2_1	0.00519	0.00525	0.26493
sky130_osu_sc_18T_ls__and2_2	0.00519	0.00524	0.54671
sky130_osu_sc_18T_ls__and2_4	0.00519	0.00525	1.07494
sky130_osu_sc_18T_ls__and2_6	0.00522	0.00524	1.53195
sky130_osu_sc_18T_ls__and2_8	0.00519	0.00524	2.05921
sky130_osu_sc_18T_ls__and2_l	0.00398	0.00405	0.19508

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.00008	0.00011
sky130_osu_sc_18T_ls__and2_2	0.00000	0.00012	0.00014
sky130_osu_sc_18T_ls__and2_4	0.00000	0.00019	0.00021
sky130_osu_sc_18T_ls__and2_6	0.00000	0.00026	0.00027
sky130_osu_sc_18T_ls__and2_8	0.00000	0.00034	0.00035
sky130_osu_sc_18T_ls__and2_l	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__and2_1	A->Y (RR)	0.35868	1.83581	10.43520
	B->Y (RR)	0.36887	1.84446	10.67860
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.37466	1.66607	11.03730
	B->Y (RR)	0.38449	1.66961	11.22510
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.50254	1.63976	11.63010
	B->Y (RR)	0.51279	1.64209	11.75310
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.63346	1.68791	11.78360
	B->Y (RR)	0.64377	1.69191	11.85600
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.76478	1.79483	12.30400
	B->Y (RR)	0.77479	1.80183	12.34110
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.41872	2.04919	10.84720
	B->Y (RR)	0.42991	2.05659	11.08940

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__and2_1	A->Y (FF)	0.48039	1.29582	8.49329
	B->Y (FF)	0.52254	1.34050	8.58193
sky130_osu_sc_18T_ls__and2_2	A->Y (FF)	0.62857	1.45425	8.88875
	B->Y (FF)	0.67274	1.49774	8.96002
sky130_osu_sc_18T_ls__and2_4	A->Y (FF)	0.95276	1.79809	9.43667
	B->Y (FF)	0.99777	1.84463	9.48893
sky130_osu_sc_18T_ls__and2_6	A->Y (FF)	1.27702	2.13370	9.83373
	B->Y (FF)	1.32281	2.18241	9.88442
sky130_osu_sc_18T_ls__and2_8	A->Y (FF)	1.58866	2.47978	10.27210
	B->Y (FF)	1.63559	2.52761	10.32410
sky130_osu_sc_18T_ls__and2_l	A->Y (FF)	0.51318	1.35575	8.58387
	B->Y (FF)	0.55855	1.40642	8.68274

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00337	0.00323	0.00305
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00328	0.00310
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00638	0.00637	0.00623
	B	0.00000	0.00000	0.00000
	B	0.00642	0.00644	0.00628
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01294	0.01322	0.01312
	B	0.00000	0.00000	0.00000
	B	0.01300	0.01325	0.01323
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01947	0.02001	0.02009
	B	0.00000	0.00000	0.00000
	B	0.01953	0.02000	0.02021
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02598	0.02676	0.02704
	B	0.00000	0.00000	0.00000
	B	0.02601	0.02683	0.02714
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00248	0.00238	0.00223
	B	0.00000	0.00000	0.00000
	B	0.00252	0.00242	0.00229

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00766	0.00753	0.00741
	B	0.00000	0.00000	0.00000
	B	0.00850	0.00840	0.00825
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00976	0.00991	0.00978
	B	0.00000	0.00000	0.00000
	B	0.01061	0.01075	0.01063
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01490	0.01553	0.01554
	B	0.00000	0.00000	0.00000
	B	0.01575	0.01636	0.01636
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02010	0.02116	0.02136
	B	0.00000	0.00000	0.00000
	B	0.02092	0.02196	0.02218
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02510	0.02654	0.02705
	B	0.00000	0.00000	0.00000
	B	0.02595	0.02733	0.02784
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00587	0.00574	0.00564
	B	0.00000	0.00000	0.00000
	B	0.00648	0.00638	0.00626

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00270	-0.00272	-0.00272
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00270	-0.00272	-0.00272
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00269	-0.00271	-0.00272
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00270	-0.00272	-0.00273
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00269	-0.00271	-0.00272
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00197	-0.00198	-0.00198

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00271	0.00273	0.00273
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00271	0.00276	0.00272
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00271	0.00276	0.00272
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00272	0.00277	0.00274
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00271	0.00276	0.00272
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00197	0.00199	0.00199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00254	-0.00256	-0.00255
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00254	-0.00255	-0.00255
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00254	-0.00256	-0.00255
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00254	-0.00256	-0.00255
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00254	-0.00256	-0.00255
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00185	-0.00187	-0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00254	0.00257	0.00256
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00254	0.00257	0.00256
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00254	0.00257	0.00256
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00254	0.00257	0.00256
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00254	0.00257	0.00256
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00185	0.00188	0.00187

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ls__aoi21_l	0.00474	0.00496	0.00495	0.10629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.00005	0.00008

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi21_l	A0->Y (FR)	0.81569	2.93878	14.98260
	A1->Y (FR)	0.70235	2.78027	14.72690
	B0->Y (FR)	0.66919	2.71018	14.40120

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi21_l	A0->Y (RF)	0.09683	0.74653	5.82604
	A1->Y (RF)	0.08750	0.74108	5.79044
	B0->Y (RF)	0.06811	0.72223	5.99365

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00587	0.00579	0.00575
	A1	0.00000	0.00000	0.00000
	A1	0.00502	0.00489	0.00485
	B0	0.00505	0.00489	0.00484

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00059	0.00049	0.00034
	A1	0.00000	0.00000	0.00000
	A1	0.00060	0.00050	0.00035
	B0	-0.00054	-0.00054	-0.00063

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00229	-0.00235	-0.00232
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00239	-0.00241	-0.00240
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00239	-0.00242	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00230	0.00237	0.00232
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00239	0.00242	0.00241
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00239	0.00242	0.00241

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00227	-0.00230	-0.00229
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00236	-0.00238	-0.00237
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00257	-0.00259	-0.00259

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00228	0.00230	0.00229
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00236	0.00239	0.00238
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00259	0.00259	0.00260

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00153	-0.00157	-0.00154

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00165	0.00165	0.00157

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__aoi22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__aoi22_1	0.00475	0.00497	0.00529	0.00502	0.10354

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_1	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi22_l	A0->Y (FR)	1.04524	3.15909	15.10790
	A1->Y (FR)	0.93303	3.01587	14.91410
	B0->Y (FR)	0.72543	2.72791	14.25400
	B1->Y (FR)	0.83617	2.86029	14.44920

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__aoi22_l	A0->Y (RF)	0.11618	0.76553	5.83244
	A1->Y (RF)	0.10686	0.76061	5.79755
	B0->Y (RF)	0.08392	0.72618	5.72201
	B1->Y (RF)	0.09268	0.73407	5.76485

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00719	0.00709	0.00705
	A1	0.00635	0.00621	0.00615
	B0	0.00545	0.00523	0.00517
	B1	0.00626	0.00609	0.00603

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00160	0.00153	0.00132
	A1	0.00162	0.00154	0.00134
	B0	-0.00022	-0.00023	-0.00032
	B1	-0.00023	-0.00023	-0.00031

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00229	-0.00234	-0.00232
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00239	-0.00241	-0.00240
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00239	-0.00241	-0.00240
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00239	-0.00241	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00230	0.00235	0.00232
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00239	0.00242	0.00241
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00239	0.00242	0.00241
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00239	0.00242	0.00241

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00227	-0.00229	-0.00229
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00236	-0.00238	-0.00237
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00257	-0.00258	-0.00259
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00257	-0.00258	-0.00259

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00228	0.00229	0.00229
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00236	0.00241	0.00238
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00258	0.00259	0.00259
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00258	0.00259	0.00259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00154	-0.00157	-0.00155
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00154	-0.00154	-0.00154
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00263	-0.00265	-0.00266
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00263	-0.00265	-0.00266

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00159	0.00159	0.00156
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00154	0.00154	0.00154
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00265	0.00266	0.00266
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00265	0.00266	0.00266

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00155	-0.00158	-0.00155
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00155	-0.00156	-0.00155
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00244	-0.00245	-0.00244
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00244	-0.00245	-0.00244

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00160	0.00159	0.00157
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00155	0.00156	0.00155
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00244	0.00245	0.00245
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00244	0.00245	0.00245

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__buf_1	9.52380
sky130_osu_sc_18T_ls__buf_2	12.45420
sky130_osu_sc_18T_ls__buf_4	18.31500
sky130_osu_sc_18T_ls__buf_6	24.17580
sky130_osu_sc_18T_ls__buf_8	30.03660
sky130_osu_sc_18T_ls__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ls__buf_1	0.00529	0.27332
sky130_osu_sc_18T_ls__buf_2	0.00529	0.53971
sky130_osu_sc_18T_ls__buf_4	0.00528	1.07465
sky130_osu_sc_18T_ls__buf_6	0.00098	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00529	2.07329
sky130_osu_sc_18T_ls__buf_l	0.00412	0.19631

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.00007	0.00007
sky130_osu_sc_18T_ls__buf_2	0.00000	0.00011	0.00011
sky130_osu_sc_18T_ls__buf_4	0.00000	0.00018	0.00018
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	0.00032	0.00033
sky130_osu_sc_18T_ls__buf_l	0.00000	0.00007	0.00007

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__buf_1	A->Y (RR)	0.28520	1.78235	10.51710
sky130_osu_sc_18T_ls__buf_2	A->Y (RR)	0.26931	1.55828	10.76430
sky130_osu_sc_18T_ls__buf_4	A->Y (RR)	0.34116	1.48489	11.35940
sky130_osu_sc_18T_ls__buf_8	A->Y (RR)	0.49781	1.52198	11.92320
sky130_osu_sc_18T_ls__buf_l	A->Y (RR)	0.33172	1.96764	10.73070

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__buf_1	A->Y (FF)	0.45079	1.26731	8.45810
sky130_osu_sc_18T_ls__buf_2	A->Y (FF)	0.60191	1.41760	8.82661
sky130_osu_sc_18T_ls__buf_4	A->Y (FF)	0.92822	1.76641	9.40150
sky130_osu_sc_18T_ls__buf_8	A->Y (FF)	1.56708	2.45390	10.25010
sky130_osu_sc_18T_ls__buf_l	A->Y (FF)	0.49093	1.33304	8.53543

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00311	0.00291	0.00272
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00611	0.00607	0.00586
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01272	0.01289	0.01278
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02581	0.02643	0.02661
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00236	0.00222	0.00205

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00748	0.00735	0.00722
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00955	0.00966	0.00955
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01471	0.01530	0.01530
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02493	0.02633	0.02683
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00580	0.00565	0.00556

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00039	-0.00039	-0.00039

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
	0.00039	0.00039	0.00039

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__dffr_1	63.73620
sky130_osu_sc_18T_ls__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_ls__dffr_1	0.00492	0.00503	0.01540	0.26420	0.26493
sky130_osu_sc_18T_ls__dffr_l	0.00492	0.00503	0.01540	0.19313	0.19329

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	0.00039	0.00043
sky130_osu_sc_18T_ls__dffr_l	0.00000	0.00039	0.00043

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	CK->Q (RR)	2.66521	4.67652	15.41420
	QN->Q (FR)	0.22173	1.90726	14.41290
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	2.57322	4.74196	15.40850
	QN->Q (FR)	0.25039	2.03545	14.28730

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	CK->Q (RF)	2.24390	4.78003	19.51760
	QN->Q (RF)	0.06055	0.80261	7.37840
	RN->Q (FF)	1.45113	4.15881	22.16760
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	2.29991	5.12840	19.79770
	QN->Q (RF)	0.06569	0.83249	7.40387
	RN->Q (FF)	1.50988	4.50248	22.44300

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	CK->QN (RR)	1.98764	3.47575	12.32070
	RN->QN (FR)	1.19237	2.84882	14.97100
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	2.00111	3.61107	12.31880
	RN->QN (FR)	1.20801	2.98653	14.96700

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffr_1	**CK->QN (RF)**	2.27066	3.08182	7.02382
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	2.15708	2.96845	6.92431

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-0.19621	-0.23616	-1.22865
	setup	CK (R)	2.07457	2.06710	2.68021
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.19961	-0.23687	-1.22854
	setup	CK (R)	2.08081	2.07590	2.69198

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-1.26363	-1.74866	-14.54150
	setup	CK (R)	1.41174	1.88076	14.67560
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-1.26386	-1.74929	-14.54220
	setup	CK (R)	1.41014	1.88045	14.67580

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-0.19621	-0.23616	-1.22865
	setup	CK (R)	2.07457	2.06710	2.68021
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.19961	-0.23687	-1.22854
	setup	CK (R)	2.08081	2.07590	2.69198

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	hold	CK (R)	-1.26363	-1.74866	-14.54150
	setup	CK (R)	1.41174	1.88076	14.67560
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-1.26386	-1.74929	-14.54220
	setup	CK (R)	1.41014	1.88045	14.67580

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	recovery	CK (R)	1.95508	1.94991	2.32255
	removal	CK (R)	-0.23163	-0.27783	-0.11960
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	1.96518	1.95857	2.34055
	removal	CK (R)	-0.23163	-0.27783	-0.11960

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	recovery	CK (R)	1.95508	1.94991	2.32255
	removal	CK (R)	-0.23163	-0.27783	-0.11960
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	1.96518	1.95857	2.34055
	removal	CK (R)	-0.23163	-0.27783	-0.11960

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	min_pulse_width	RN ()	0.94656	1.32462	14.13450
	min_pulse_width	RN ()	0.94404	1.32462	14.13120
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.94808	1.31615	14.10520
	min_pulse_width	RN ()	0.94657	1.31403	14.10190

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	min_pulse_width	CK ()	1.16462	1.30344	13.33370
	min_pulse_width	CK ()	1.29438	1.13195	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	1.03078	1.19123	13.33370
	min_pulse_width	CK ()	1.27667	1.12137	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_18T_ls__dffr_1	min_pulse_width	CK ()	2.71349	2.78334	13.51930
	min_pulse_width	CK ()	1.17120	1.57021	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	2.72562	2.78757	13.52900
	min_pulse_width	CK ()	1.16820	1.57021	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00724	0.00697	0.00534
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00637	0.00612	0.00514

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00819	0.00804	0.00772
	RN	-0.00111	-0.01732	-0.10822
	RN	0.01817	0.01812	0.01770
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00731	0.00715	0.00689
	RN	-0.00111	-0.01435	-0.07911
	RN	0.01728	0.01721	0.01687

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00820	0.00805	0.00773
	RN	-0.00111	-0.01735	-0.10852
	RN	0.01818	0.01813	0.01772
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00731	0.00716	0.00689
	RN	-0.00111	-0.01436	-0.07917
	RN	0.01728	0.01722	0.01688

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00722	0.00695	0.00496
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00635	0.00609	0.00483

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00232	-0.00230
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00787	0.00772	0.00747
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00345	0.00332	0.00309
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00232	-0.00230
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00787	0.00772	0.00747
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00345	0.00332	0.00309

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00229	0.00232	0.00230
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01359	0.01344	0.01315
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00626	0.00612	0.00604
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00229	0.00232	0.00230
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01359	0.01344	0.01315
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00626	0.00612	0.00604

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00296	0.00281	0.00261
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00779	0.00751	0.00718
sky130_osu_sc_18T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00296	0.00281	0.00261
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00780	0.00751	0.00718

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00657	0.00634	0.00629
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01393	0.01371	0.01346
sky130_osu_sc_18T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00657	0.00634	0.00629
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01393	0.01371	0.01346

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00044	-0.00064	-0.00086
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00390	0.00354	0.00295
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00064	-0.00082	-0.00110
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00044	-0.00064	-0.00086
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00390	0.00354	0.00295
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00064	-0.00083	-0.00110

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01105	0.01077	0.01068
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02180	0.02163	0.01825
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01687	0.01677	0.01649
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02209	0.02162	0.02117
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01183	0.01155	0.01143
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01105	0.01077	0.01068
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02180	0.02165	0.01825
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01687	0.01677	0.01649
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02209	0.02162	0.02117
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01183	0.01155	0.01143

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__dffsr_1	69.59700
sky130_osu_sc_18T_ls__dffsr_l	69.59700

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_18T_ls__dffsr_1	0.00487	0.00504	0.01039	0.01562	0.27010	0.26755
sky130_osu_sc_18T_ls__dffsr_l	0.00487	0.00504	0.01040	0.01562	0.19644	0.19358

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ls__dffsr_1	0.00000	0.00041	0.00047
sky130_osu_sc_18T_ls__dffsr_l	0.00000	0.00041	0.00046

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->Q (RR)	2.55130	4.53479	15.44890
	QN->Q (FR)	0.21491	1.89778	14.40690
	RN->Q (RR)	2.14145	4.15314	15.15510
	SN->Q (FR)	2.20062	4.35102	18.63860
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	2.52758	4.70294	15.64750
	QN->Q (FR)	0.25017	2.04614	14.40020
	RN->Q (RR)	2.12705	4.31735	15.36980
	SN->Q (FR)	2.18727	4.51531	18.84920

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->Q (RF)	2.39801	4.94819	19.79250
	QN->Q (RF)	0.05546	0.77576	7.16419
	RN->Q (FF)	1.54639	4.24442	22.39280
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	2.47400	5.34816	20.23290
	QN->Q (RF)	0.06556	0.83427	7.43050
	RN->Q (FF)	1.62643	4.64202	22.83330

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->QN (RR)	2.14505	3.64579	12.49150
	RN->QN (FR)	1.29551	2.93781	15.09310
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	2.17070	3.80117	12.52340
	RN->QN (FR)	1.32469	3.09689	15.12900

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffsr_1	CK->QN (RF)	2.19427	2.98178	7.03761
	RN->QN (RF)	1.77642	2.60595	6.76265
	SN->QN (FF)	1.83634	2.80336	10.24210
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	2.13391	2.93394	7.00930
	RN->QN (RF)	1.71854	2.56278	6.74149
	SN->QN (FF)	1.77925	2.76093	10.22210

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-0.23189	-0.26223	-1.34531
	setup	CK (R)	1.97403	1.95664	2.48315
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.23357	-0.26302	-1.34382
	setup	CK (R)	1.97698	1.95976	2.50027

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-1.41043	-1.88908	-14.73490
	setup	CK (R)	1.55794	1.99468	14.82930
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-1.41207	-1.89013	-14.73320
	setup	CK (R)	1.55132	1.99524	14.82820

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-0.23189	-0.26223	-1.34531
	setup	CK (R)	1.97403	1.95664	2.48315
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.23357	-0.26302	-1.34382
	setup	CK (R)	1.97698	1.95976	2.50027

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	hold	CK (R)	-1.41043	-1.88908	-14.73490
	setup	CK (R)	1.55794	1.99468	14.82930
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-1.41207	-1.89013	-14.73320
	setup	CK (R)	1.55132	1.99524	14.82820

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	1.74619	1.73486	2.02350
	removal	CK (R)	-0.13936	-0.17081	-0.10894
	hold	SN (R)	-1.76469	-2.07501	-11.70970
	setup	SN (R)	1.82368	2.14242	12.35720
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	1.74892	1.73664	2.02579
	removal	CK (R)	-0.14016	-0.17199	-0.10882
	hold	SN (R)	-1.63700	-1.94731	-11.60580
	setup	SN (R)	1.80990	2.10430	12.29680

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	1.74619	1.73486	2.02350
	removal	CK (R)	-0.13936	-0.17081	-0.10894
	hold	SN (R)	-1.79920	-2.08878	-11.70970
	hold	SN (R)	-1.76469	-2.07501	-11.71780
	setup	SN (R)	1.82368	2.13735	12.32890
	setup	SN (R)	1.78795	2.14242	12.35720
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	1.74892	1.73664	2.02579
	removal	CK (R)	-0.14016	-0.17199	-0.10882
	hold	SN (R)	-1.75803	-2.02507	-11.62670
	hold	SN (R)	-1.63700	-1.94731	-11.60580
	setup	SN (R)	1.80990	2.10430	12.24570
	setup	SN (R)	1.66737	2.08079	12.29680

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	min_pulse_width	RN ()	1.07838	1.41565	14.35910
	min_pulse_width	RN ()	1.07568	1.41565	14.35910
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	1.10806	1.41565	14.33630
	min_pulse_width	RN ()	1.09833	1.41354	14.33630

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	0.08408	0.10807	0.74435
	removal	CK (R)	-0.01394	-0.04340	-0.54540
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.08323	0.10548	0.74334
	removal	CK (R)	-0.01117	-0.04618	-0.54561

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	recovery	CK (R)	0.08408	0.10807	0.74435
	removal	CK (R)	-0.01394	-0.04340	-0.54540
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.08323	0.10548	0.74334
	removal	CK (R)	-0.01117	-0.04618	-0.54561

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	min_pulse_width	SN ()	1.85470	2.24558	15.57640
	min_pulse_width	SN ()	1.84693	2.25193	15.58300
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	1.84097	2.19053	15.46250
	min_pulse_width	SN ()	1.72725	2.19053	15.51130

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	min_pulse_width	CK ()	1.10215	1.19759	13.33370
	min_pulse_width	CK ()	1.37146	1.21241	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	1.01117	1.11925	13.33370
	min_pulse_width	CK ()	1.35390	1.20182	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_18T_ls__dffsr_1	min_pulse_width	CK ()	2.62620	2.67748	13.55180
	min_pulse_width	CK ()	1.32365	1.69300	13.52900
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	2.62378	2.67748	13.54860
	min_pulse_width	CK ()	1.32041	1.69300	13.52900

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00859	0.00842	0.00716
	RN	0.01632	0.01616	0.01503
	SN	-0.00111	-0.01755	-0.11063
	SN	0.01745	0.01727	0.01626
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00780	0.00759	0.00652
	RN	0.01553	0.01533	0.01440
	SN	-0.00111	-0.01450	-0.08046
	SN	0.01665	0.01646	0.01561

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00906	0.00897	0.00866
	RN	-0.00111	-0.01755	-0.11063
	RN	0.01888	0.01883	0.01844
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00826	0.00815	0.00787
	RN	-0.00111	-0.01450	-0.08046
	RN	0.01807	0.01800	0.01764

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00909	0.00899	0.00868
	RN	-0.00111	-0.01745	-0.10959
	RN	0.01888	0.01884	0.01844
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00828	0.00818	0.00790
	RN	-0.00111	-0.01437	-0.07929
	RN	0.01808	0.01801	0.01764

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00856	0.00838	0.00688
	RN	0.01627	0.01611	0.01463
	SN	-0.00111	-0.01745	-0.10958
	SN	0.01740	0.01722	0.01585
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00777	0.00756	0.00630
	RN	0.01547	0.01527	0.01405
	SN	-0.00111	-0.01437	-0.07929
	SN	0.01661	0.01641	0.01528

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00229	-0.00231
	(!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)	0.00995	0.00983	0.00961
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00393	0.00381	0.00358
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00390	0.00378	0.00355
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00395	0.00384	0.00360
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00229	-0.00231
	(!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)	0.00995	0.00983	0.00961
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00393	0.00381	0.00358
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00390	0.00378	0.00355
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00395	0.00384	0.00360

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00229	0.00229	0.00231
	(!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)	0.01505	0.01493	0.01433
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00668	0.00655	0.00643
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00671	0.00658	0.00646
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00665	0.00652	0.00640
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00229	0.00229	0.00231
	(!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)	0.01505	0.01493	0.01433
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00667	0.00654	0.00643
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00671	0.00658	0.00645
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00664	0.00651	0.00640

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00312	0.00296	0.00266
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00959	0.00930	0.00886
sky130_osu_sc_18T_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)	0.00313	0.00296	0.00266
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00959	0.00930	0.00886

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00719	0.00695	0.00689
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01484	0.01461	0.01432
sky130_osu_sc_18T_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)	0.00718	0.00694	0.00688
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01483	0.01460	0.01431

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	-0.00535	-0.00539	-0.00539
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00547	-0.00551	-0.00551
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00528	-0.00530	-0.00531
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00276	0.00265	0.00229
sky130_osu_sc_18T_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)	-0.00535	-0.00539	-0.00539
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00546	-0.00550	-0.00550
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00528	-0.00530	-0.00531
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00276	0.00265	0.00230

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00539	0.00540	0.00541
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00547	0.00551	0.00551
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00530	0.00538	0.00531
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01073	0.01056	0.00988
sky130_osu_sc_18T_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)	0.00539	0.00540	0.00541
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00546	0.00550	0.00550
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00529	0.00538	0.00531
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01073	0.01056	0.00988

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00045	-0.00064	-0.00087
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00446	0.00414	0.00356
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00441	0.00410	0.00351
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00050	-0.00071	-0.00097
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00372	0.00342	0.00291
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00045	-0.00064	-0.00087
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00446	0.00414	0.00355
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00440	0.00409	0.00351
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00050	-0.00071	-0.00097
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00372	0.00342	0.00291

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02400	0.02383	0.01999
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01107	0.01081	0.01071
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01720	0.01712	0.01685
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01725	0.01719	0.01691
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02352	0.02306	0.02235
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01172	0.01144	0.01132
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01429	0.01377	0.01357
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02400	0.02383	0.01999
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01107	0.01081	0.01071
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01720	0.01712	0.01685
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01725	0.01719	0.01691
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02352	0.02305	0.02235
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01172	0.01144	0.01132
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01429	0.01376	0.01356

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__dffs_1	57.87540
sky130_osu_sc_18T_ls__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_ls__dffs_1	0.00490	0.00855	0.01538	0.26866	0.26467
sky130_osu_sc_18T_ls__dffs_l	0.00490	0.00855	0.01538	0.19491	0.19340

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	0.00036	0.00041
sky130_osu_sc_18T_ls__dffs_l	0.00000	0.00035	0.00041

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->Q (RR)	1.41981	3.34548	14.23380
	QN->Q (FR)	0.22146	1.91215	14.50790
	SN->Q (FR)	1.29608	3.37496	17.76380
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	1.40954	3.50577	14.27060
	QN->Q (FR)	0.25001	2.03741	14.33080
	SN->Q (FR)	1.29393	3.53103	17.80330

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->Q (RF)	2.37406	4.92706	19.85080
	QN->Q (RF)	0.06008	0.80108	7.39157
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	2.41664	5.25844	20.02440
	QN->Q (RF)	0.06529	0.83252	7.40766

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->QN (RR)	2.11318	3.60247	12.43120
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	2.11407	3.72600	12.43130

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dffs_1	CK->QN (RF)	1.10995	1.82404	5.76380
	SN->QN (FF)	0.97205	1.86458	9.30438
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	1.06866	1.79458	5.73769
	SN->QN (FF)	0.93365	1.83073	9.27555

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-0.14368	-0.18314	-1.15343
	setup	CK (R)	1.00115	0.99243	1.73197
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.14601	-0.18338	-1.15363
	setup	CK (R)	1.00135	0.99336	1.72888

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-1.29393	-1.77806	-14.60130
	setup	CK (R)	1.52447	1.92872	14.74170
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-1.29410	-1.77654	-14.60280
	setup	CK (R)	1.52343	1.92835	14.74190

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-0.14368	-0.18314	-1.15343
	setup	CK (R)	1.00115	0.99243	1.73197
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.14601	-0.18338	-1.15363
	setup	CK (R)	1.00135	0.99336	1.72888

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	hold	CK (R)	-1.29393	-1.77806	-14.60130
	setup	CK (R)	1.52447	1.92872	14.74170
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-1.29410	-1.77654	-14.60280
	setup	CK (R)	1.52343	1.92835	14.74190

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	recovery	CK (R)	0.15174	0.17278	1.22458
	removal	CK (R)	-0.03777	-0.08576	-0.91388
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.14887	0.17184	1.21713
	removal	CK (R)	-0.03777	-0.08576	-0.91290

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	recovery	CK (R)	0.15174	0.17278	1.22458
	removal	CK (R)	-0.03777	-0.08576	-0.91388
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.14887	0.17184	1.21713
	removal	CK (R)	-0.03777	-0.08576	-0.91290

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	min_pulse_width	SN ()	0.92531	1.59138	14.61300
	min_pulse_width	SN ()	0.94894	1.58503	14.64550
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.90432	1.53421	14.55760
	min_pulse_width	SN ()	0.88628	1.54903	14.57720

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	min_pulse_width	CK ()	0.34550	0.72123	13.33370
	min_pulse_width	CK ()	1.30685	1.14889	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.32758	0.71699	13.33370
	min_pulse_width	CK ()	1.28508	1.13407	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_18T_ls__dffs_1	min_pulse_width	CK ()	1.64651	1.71206	13.48020
	min_pulse_width	CK ()	1.29559	1.62102	13.39880
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	1.64775	1.70994	13.49000
	min_pulse_width	CK ()	1.29249	1.62102	13.39880

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00721	0.00689	0.00516
	SN	-0.00111	-0.01750	-0.11005
	SN	0.01527	0.01507	0.01337
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00633	0.00605	0.00500
	SN	-0.00111	-0.01443	-0.07984
	SN	0.01438	0.01422	0.01321

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00819	0.00808	0.00775
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00731	0.00718	0.00691

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00820	0.00808	0.00777
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00732	0.00719	0.00693

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00718	0.00687	0.00478
	SN	-0.00111	-0.01734	-0.10840
	SN	0.01522	0.01502	0.01295
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00631	0.00603	0.00470
	SN	-0.00111	-0.01437	-0.07921
	SN	0.01434	0.01417	0.01289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00229	-0.00232	-0.00233
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00782	0.00766	0.00732
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00336	0.00323	0.00301
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00229	-0.00232	-0.00233
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00782	0.00766	0.00732
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00336	0.00323	0.00300

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00232	0.00232	0.00233
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01360	0.01346	0.01327
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00639	0.00625	0.00617
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00232	0.00232	0.00233
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01360	0.01346	0.01327
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00639	0.00625	0.00617

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00393	-0.00398	-0.00396
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00308	0.00298	0.00279
sky130_osu_sc_18T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00393	-0.00396	-0.00396
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00308	0.00298	0.00279

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00394	0.00400	0.00397
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00778	0.00758	0.00746
sky130_osu_sc_18T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00394	0.00400	0.00397
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00778	0.00758	0.00746

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00063	-0.00086
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00058	-0.00077	-0.00104
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00314	0.00282	0.00231
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00045	-0.00063	-0.00086
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00058	-0.00077	-0.00104
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00314	0.00281	0.00231

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02173	0.02158	0.02069
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01105	0.01078	0.01068
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02205	0.02155	0.02115
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01176	0.01149	0.01136
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01396	0.01342	0.01325
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02173	0.02155	0.02069
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01105	0.01078	0.01068
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02205	0.02155	0.02115
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01176	0.01149	0.01136
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01396	0.01342	0.01325

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__dff_1	48.35160
sky130_osu_sc_18T_ls__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_ls__dff_1	0.00507	0.01536	0.27562	0.26800
sky130_osu_sc_18T_ls__dff_l	0.00507	0.01536	0.19544	0.19250

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	0.00033	0.00034
sky130_osu_sc_18T_ls__dff_l	0.00000	0.00033	0.00034

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->Q (RR)	1.20250	3.10013	14.11730
	QN->Q (FR)	0.21394	1.90414	14.52720
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	1.22972	3.31545	14.19400
	QN->Q (FR)	0.25264	2.05415	14.41340

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->Q (RF)	2.20547	4.76698	19.84020
	QN->Q (RF)	0.05527	0.77482	7.18844
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	2.29435	5.15480	20.00140
	QN->Q (RF)	0.06549	0.83060	7.41288

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->QN (RR)	1.95739	3.44526	12.27950
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	1.99351	3.61276	12.31140

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__dff_1	CK->QN (RF)	0.91688	1.59753	5.55732
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.89972	1.60279	5.60499

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dff_1	hold	CK (R)	-0.15157	-0.18847	-1.21345
	setup	CK (R)	0.76062	0.75171	1.63651
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.15147	-0.18877	-1.21392
	setup	CK (R)	0.75837	0.74913	1.63222

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dff_1	hold	CK (R)	-1.26473	-1.77376	-14.61630
	setup	CK (R)	1.46900	1.95864	14.82030
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-1.26547	-1.77368	-14.61730
	setup	CK (R)	1.46391	1.95883	14.82190

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dff_1	min_pulse_width	CK ()	0.31061	0.72123	13.33370
	min_pulse_width	CK ()	1.30512	1.15101	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.30524	0.72123	13.33370
	min_pulse_width	CK ()	1.29089	1.13619	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_18T_ls__dff_1	**min_pulse_width**	**CK** ()	1.41143	1.47917	13.50630
	min_pulse_width	**CK** ()	1.21342	1.64854	13.49320
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK** ()	1.40819	1.47282	13.49970
	min_pulse_width	**CK** ()	1.21027	1.64854	13.49320

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00762	0.00731	0.00605
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00682	0.00649	0.00546

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00834	0.00826	0.00796
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00756	0.00746	0.00718

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00835	0.00826	0.00797
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00756	0.00746	0.00719

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00759	0.00728	0.00570
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00679	0.00646	0.00514

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00228	-0.00230
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00757	0.00743	0.00713
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00226	-0.00228	-0.00230
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00757	0.00744	0.00714

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00228	0.00228	0.00230
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01418	0.01401	0.01374
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00228	0.00228	0.00230
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01418	0.01402	0.01374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00046	-0.00065	-0.00087
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00055	-0.00077	-0.00103
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00046	-0.00065	-0.00087
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00055	-0.00077	-0.00103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01101	0.01074	0.01064
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02145	0.02132	0.02065
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02248	0.02198	0.02156
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01171	0.01144	0.01131
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01101	0.01074	0.01064
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02145	0.02132	0.02065
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02248	0.02199	0.02156
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01171	0.01144	0.01131

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__inv_1	6.59340
sky130_osu_sc_18T_ls__inv_10	32.96700
sky130_osu_sc_18T_ls__inv_2	9.52380
sky130_osu_sc_18T_ls__inv_3	12.45420
sky130_osu_sc_18T_ls__inv_4	15.38460
sky130_osu_sc_18T_ls__inv_6	21.24540
sky130_osu_sc_18T_ls__inv_8	27.10620
sky130_osu_sc_18T_ls__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ls__inv_1	0.00508	0.26790
sky130_osu_sc_18T_ls__inv_10	0.04777	2.63007
sky130_osu_sc_18T_ls__inv_2	0.00975	0.53567
sky130_osu_sc_18T_ls__inv_3	0.01453	0.78581
sky130_osu_sc_18T_ls__inv_4	0.01923	1.06219
sky130_osu_sc_18T_ls__inv_6	0.02883	1.57295
sky130_osu_sc_18T_ls__inv_8	0.03831	2.08226
sky130_osu_sc_18T_ls__inv_l	0.00388	0.19216

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.00004	0.00004
sky130_osu_sc_18T_ls__inv_10	0.00000	0.00035	0.00037
sky130_osu_sc_18T_ls__inv_2	0.00000	0.00007	0.00007
sky130_osu_sc_18T_ls__inv_3	0.00000	0.00011	0.00011
sky130_osu_sc_18T_ls__inv_4	0.00000	0.00014	0.00015
sky130_osu_sc_18T_ls__inv_6	0.00000	0.00021	0.00022
sky130_osu_sc_18T_ls__inv_8	0.00000	0.00028	0.00030
sky130_osu_sc_18T_ls__inv_l	0.00000	0.00003	0.00004

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__inv_1	**A->Y (FR)**	0.20918	1.83669	14.04670
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.19702	1.22426	14.25150
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.15022	1.56086	14.03750
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.15487	1.45113	14.04240
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.14733	1.36737	14.08740
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.15548	1.28828	14.07870
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.17336	1.24240	14.08110
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.24506	1.98195	13.97130

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__inv_1	**A->Y (RF)**	0.04992	0.73011	6.67562
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.07256	0.61073	6.75254
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.04166	0.67569	6.67695
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.04467	0.65845	6.70682
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.04467	0.64035	6.71649
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.05311	0.62288	6.71962
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.06238	0.61450	6.72382
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.05866	0.78231	6.92541

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00386	0.00363	0.00371
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03378	0.03300	0.03361
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00696	0.00678	0.00677
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01066	0.01020	0.01039
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01375	0.01315	0.01348
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02048	0.02010	0.02020
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02715	0.02640	0.02689
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00295	0.00267	0.00266

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00060	-0.00063	-0.00066
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01085	-0.01072	-0.01044
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00206	-0.00212	-0.00214
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00263	-0.00272	-0.00276
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00415	-0.00424	-0.00424
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00628	-0.00639	-0.00632
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00850	-0.00855	-0.00840
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00042	-0.00044	-0.00047

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_18T_ls__mux2_1	0.23120	0.23309	0.01033	0.26016

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	0.00012	0.00012

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__mux2_1	A0->Y (RR)	-	0.11117	1.14589	9.71970
	A1->Y (RR)	-	0.12610	1.15854	9.83977
	S0->Y (RR)	(!A0 * A1)	0.20355	1.34837	9.59500
	S0->Y (FR)	(A0 * !A1)	0.24598	1.73924	11.62570

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__mux2_1	A0->Y (FF)	-	0.05532	0.74256	6.89875
	A1->Y (FF)	-	0.04659	0.73193	6.87628
	S0->Y (FF)	(!A0 * A1)	0.47331	1.26775	8.44883
	S0->Y (RF)	(A0 * !A1)	0.05711	0.73855	6.60142

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00411	-0.00411	-0.00411
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00295	-0.00295	-0.00295
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00488	0.00463	0.00455
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00248	-0.00270	-0.00290

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00411	0.00411	0.00411
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00295	0.00295	0.00295
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00106	0.00085	0.00066
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01014	0.00989	0.00981

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00118	-0.00118	-0.00118

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00118	0.00118	0.00118

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00141	-0.00141	-0.00141

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00141	0.00141	0.00141

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00072	-0.00094	-0.00114
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00070	-0.00094	-0.00112

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00766	0.00741	0.00733
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00736	0.00712	0.00705

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__nand2_1	9.52380
sky130_osu_sc_18T_ls__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__nand2_1	0.00510	0.00502	0.26584
sky130_osu_sc_18T_ls__nand2_l	0.00389	0.00383	0.19109

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.00005	0.00007
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.00005	0.00007

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nand2_1	A->Y (FR)	0.22529	1.83113	14.04420
	B->Y (FR)	0.26480	1.89552	14.00770
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.25780	1.98125	13.97000
	B->Y (FR)	0.29830	2.04132	14.00370

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nand2_1	A->Y (RF)	0.08051	0.86555	7.52239
	B->Y (RF)	0.08953	0.87072	7.42150
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.09895	0.96732	7.87848
	B->Y (RF)	0.10801	0.97495	7.78075

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00412	0.00385	0.00393
	B	0.00000	0.00000	0.00000
	B	0.00496	0.00483	0.00428
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00311	0.00274	0.00281
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00350	0.00353

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00027	-0.00031	-0.00034
	B	0.00000	0.00000	0.00000
	B	-0.00025	-0.00029	-0.00031
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00021	-0.00025	-0.00027
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00024	-0.00026

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00264	-0.00267	-0.00267
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00192	-0.00193	-0.00193

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00266	0.00269	0.00268
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00192	0.00194	0.00193

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00246	-0.00248	-0.00247
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00177	-0.00179	-0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00246	0.00249	0.00247
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00177	0.00181	0.00178

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__nor2_1	9.52380
sky130_osu_sc_18T_ls__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__nor2_1	0.00494	0.00540	0.10962
sky130_osu_sc_18T_ls__nor2_l	0.00372	0.00415	0.07929

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.00004	0.00007
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.00004	0.00007

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nor2_1	A->Y (FR)	0.63501	2.74900	14.85410
	B->Y (FR)	0.55530	2.58713	14.35330
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.70537	2.96946	14.76310
	B->Y (FR)	0.64549	2.81919	14.24990

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__nor2_1	A->Y (RF)	0.05539	0.64995	5.35147
	B->Y (RF)	0.05166	0.64144	5.32554
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.06414	0.69530	5.59623
	B->Y (RF)	0.06055	0.68399	5.57329

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00491	0.00481	0.00478
	B	0.00000	0.00000	0.00000
	B	0.00422	0.00404	0.00401
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00360	0.00353	0.00350
	B	0.00000	0.00000	0.00000
	B	0.00318	0.00304	0.00278

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00015	0.00006	-0.00005
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00055	-0.00064
sky130_osu_sc_18T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00010	0.00003	-0.00005
	B	0.00000	0.00000	0.00000
	B	-0.00035	-0.00036	-0.00043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00228	-0.00232	-0.00231
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00159	-0.00163	-0.00162

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00229	0.00232	0.00231
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00160	0.00163	0.00162

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00107	-0.00108	-0.00108

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00154	0.00155	0.00155
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00108	0.00108	0.00108

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ls__oai21_l	0.00510	0.00505	0.00434	0.10718

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.00005	0.00008

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai21_l	A0->Y (FR)	0.76181	2.73942	14.38890
	A1->Y (FR)	0.86016	2.96089	14.94960
	B0->Y (FR)	0.32130	1.67525	11.04500

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai21_l	A0->Y (RF)	0.10687	0.76441	5.87823
	A1->Y (RF)	0.11248	0.76789	5.89442
	B0->Y (RF)	0.08905	0.75543	5.90759

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00539	0.00512	0.00489
	A1	0.00000	0.00000	0.00000
	A1	0.00614	0.00601	0.00597
	B0	0.00421	0.00382	0.00397

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00031	0.00031	0.00022
	A1	0.00000	0.00000	0.00000
	A1	0.00105	0.00096	0.00084
	B0	0.00156	0.00153	0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00155	-0.00156	-0.00155
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00229	-0.00233	-0.00232
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00241	-0.00242	-0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00155	0.00156	0.00155
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00231	0.00233	0.00232
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00241	0.00243	0.00242

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00223	-0.00229	-0.00227
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00227	-0.00233	-0.00231
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00238	-0.00241	-0.00239

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00225	0.00229	0.00227
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00229	0.00233	0.00231
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00238	0.00241	0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00194	-0.00195	-0.00199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00199	0.00200	0.00200

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__oai22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ls__oai22_1	0.00482	0.00521	0.00540	0.00513	0.10707

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai22_l	A0->Y (FR)	0.95704	3.06394	15.03870
	A1->Y (FR)	0.87140	2.88578	14.53020
	B0->Y (FR)	0.61648	2.59044	14.24400
	B1->Y (FR)	0.71193	2.79862	14.75820

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__oai22_l	A0->Y (RF)	0.13975	0.80794	5.95619
	A1->Y (RF)	0.12372	0.78843	5.91955
	B0->Y (RF)	0.10382	0.77103	5.94876
	B1->Y (RF)	0.12216	0.80054	6.03859

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00763	0.00752	0.00747
	A1	0.00687	0.00661	0.00635
	B0	0.00525	0.00497	0.00501
	B1	0.00605	0.00591	0.00584

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00134	0.00126	0.00110
	A1	0.00066	0.00066	0.00052
	B0	0.00067	0.00067	0.00053
	B1	0.00138	0.00128	0.00113

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00228	-0.00232	-0.00231
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00228	-0.00232	-0.00231
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00228	-0.00233	-0.00231
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00239	-0.00240	-0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00229	0.00232	0.00231
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00229	0.00232	0.00231
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00230	0.00233	0.00231
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00240	0.00244	0.00240

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00153	-0.00154	-0.00154
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00153	-0.00154	-0.00154
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00226	-0.00230	-0.00229
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00239	-0.00240	-0.00239

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00154	0.00154	0.00154
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00154	0.00154	0.00154
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00228	0.00230	0.00229
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00239	0.00240	0.00240

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00152	-0.00153	-0.00153
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00152	-0.00154	-0.00153
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00252	-0.00257	-0.00255
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00256	-0.00259	-0.00264

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00153	0.00154	0.00153
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00153	0.00154	0.00153
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00254	0.00257	0.00255
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00265	0.00266	0.00265

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00225	-0.00229	-0.00228
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00225	-0.00230	-0.00228
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00257	-0.00262	-0.00261
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00259	-0.00263	-0.00268

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00226	0.00229	0.00228
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00226	0.00230	0.00228
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00259	0.00262	0.00261
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00268	0.00273	0.00269

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__or2_1	12.45420
sky130_osu_sc_18T_ls__or2_2	15.38460
sky130_osu_sc_18T_ls__or2_4	21.24540
sky130_osu_sc_18T_ls__or2_8	32.96700
sky130_osu_sc_18T_ls__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__or2_1	0.00527	0.00521	0.26667
sky130_osu_sc_18T_ls__or2_2	0.00527	0.00521	0.53379
sky130_osu_sc_18T_ls__or2_4	0.00527	0.00521	1.05148
sky130_osu_sc_18T_ls__or2_8	0.00527	0.00521	2.07723
sky130_osu_sc_18T_ls__or2_l	0.00411	0.00397	0.19766

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.00008	0.00010
sky130_osu_sc_18T_ls__or2_2	0.00000	0.00011	0.00014
sky130_osu_sc_18T_ls__or2_4	0.00000	0.00018	0.00021
sky130_osu_sc_18T_ls__or2_8	0.00000	0.00032	0.00036
sky130_osu_sc_18T_ls__or2_l	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__or2_1	A->Y (RR)	0.29747	1.79103	10.48060
	B->Y (RR)	0.28927	1.77465	10.37690
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.28294	1.57535	10.80930
	B->Y (RR)	0.27318	1.56052	10.72570
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.35522	1.49606	11.30590
	B->Y (RR)	0.34506	1.48405	11.25040
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.51091	1.54016	12.03840
	B->Y (RR)	0.50038	1.52956	11.99350
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.34646	2.00396	10.94970
	B->Y (RR)	0.33806	1.98857	10.84370

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__or2_1	A->Y (FF)	1.15934	2.04748	9.41625
	B->Y (FF)	1.03993	1.85428	8.95408
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	1.53827	2.47225	9.96660
	B->Y (FF)	1.41887	2.26607	9.50657
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	2.32931	3.35222	11.05530
	B->Y (FF)	2.21098	3.15577	10.57580
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	3.88135	5.06593	13.15080
	B->Y (FF)	3.76198	4.82455	12.65160
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	1.23340	2.15061	9.53823
	B->Y (FF)	1.11552	1.96163	9.09973

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00390	0.00377	0.00356
	B	0.00000	0.00000	0.00000
	B	0.00319	0.00307	0.00281
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00695	0.00693	0.00671
	B	0.00000	0.00000	0.00000
	B	0.00619	0.00627	0.00601
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01357	0.01373	0.01362
	B	0.00000	0.00000	0.00000
	B	0.01279	0.01314	0.01298
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02666	0.02729	0.02751
	B	0.00000	0.00000	0.00000
	B	0.02588	0.02670	0.02693
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00290	0.00280	0.00263
	B	0.00000	0.00000	0.00000
	B	0.00242	0.00235	0.00214

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00848	0.00845	0.00841
	B	0.00000	0.00000	0.00000
	B	0.00756	0.00754	0.00745
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01054	0.01076	0.01079
	B	0.00000	0.00000	0.00000
	B	0.00962	0.00984	0.00981
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01558	0.01618	0.01652
	B	0.00000	0.00000	0.00000
	B	0.01466	0.01527	0.01553
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02559	0.02669	0.02803
	B	0.00000	0.00000	0.00000
	B	0.02467	0.02580	0.02697
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00646	0.00640	0.00636
	B	0.00000	0.00000	0.00000
	B	0.00579	0.00575	0.00568

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00228	-0.00234	-0.00232
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00229	-0.00234	-0.00232
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00229	-0.00234	-0.00232
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00229	-0.00234	-0.00232
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00160	-0.00163	-0.00163

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00231	0.00235	0.00232
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00231	0.00235	0.00232
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00231	0.00235	0.00232
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00231	0.00235	0.00232
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00162	0.00163	0.00163

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00154	-0.00157	-0.00155
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00154	-0.00157	-0.00155
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00154	-0.00157	-0.00155
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00154	-0.00157	-0.00155
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00109	-0.00111	-0.00109

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00157	0.00155
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00157	0.00155
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00157	0.00155
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00155	0.00157	0.00155
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00109	0.00111	0.00109

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__tbufi_1	12.45420
sky130_osu_sc_18T_ls__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ls__tbufi_1	0.00540	0.00679	0.10947
sky130_osu_sc_18T_ls__tbufi_l	0.00416	0.00525	0.08004

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.00006	0.00007

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tbufi_1	A->Y (FR)	0.52611	2.52350	14.26690
	OE->Y (FR)	0.32082	0.92928	6.94384
	OE->Y (RR)	0.62139	2.56072	10.98750
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.61583	2.78531	14.34010
	OE->Y (FR)	0.33627	0.94260	6.91948
	OE->Y (RR)	0.69593	2.82223	11.28680

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tbufi_1	A->Y (RF)	0.07582	0.72435	5.79361
	OE->Y (FF)	0.32127	0.93058	6.94416
	OE->Y (RF)	0.07589	0.72201	5.81163
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.09491	0.79394	6.11715
	OE->Y (FF)	0.33877	0.94223	6.92245
	OE->Y (RF)	0.09499	0.79321	6.11234

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00390	0.00360	0.00338
	OE	0.00000	0.00000	0.00000
	OE	0.00356	0.00334	0.00316
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00295	0.00281	0.00276
	OE	0.00000	0.00000	0.00000
	OE	0.00259	0.00242	0.00228

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00055	-0.00055	-0.00064
	OE	0.00000	0.00000	0.00000
	OE	0.00292	0.00270	0.00252
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00036	-0.00036	-0.00043
	OE	0.00000	0.00000	0.00000
	OE	0.00205	0.00188	0.00174

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00217	-0.00218	-0.00218
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00208	-0.00208	-0.00209
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00161	-0.00161	-0.00161
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00154	-0.00157	-0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00217	0.00218	0.00218
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00212	0.00212	0.00212
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00161	0.00161	0.00161
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00157	0.00157	0.00157

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00159	0.00137	0.00119
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00145	0.00121	0.00104
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00111	0.00094	0.00080
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00099	0.00083	0.00069

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00439	0.00411	0.00403
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00455	0.00431	0.00417
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00346	0.00323	0.00315
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00357	0.00337	0.00325

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__tnbufi_1	12.45420
sky130_osu_sc_18T_ls__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ls__tnbufi_1	0.00539	0.00828	0.10984
sky130_osu_sc_18T_ls__tnbufi_l	0.00416	0.00614	0.07956

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.00006	0.00007

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tnbufi_1	A->Y (FR)	0.52952	2.52637	14.33400
	OE->Y (RR)	0.05579	0.45670	3.77863
	OE->Y (FR)	0.56435	2.69298	14.80960
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.61974	2.77757	14.24880
	OE->Y (RR)	0.06184	0.48650	3.77883
	OE->Y (FR)	0.62921	2.91073	14.73130

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ls__tnbufi_1	A->Y (RF)	0.07423	0.72386	5.79851
	OE->Y (RF)	0.05557	0.45624	3.77864
	OE->Y (FF)	0.32833	1.12284	7.73185
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.09249	0.79183	6.10647
	OE->Y (RF)	0.06115	0.48485	3.77882
	OE->Y (FF)	0.36982	1.19784	7.84030

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00400	0.00370	0.00377
	OE	0.00000	0.00000	0.00000
	OE	0.00916	0.00895	0.00889
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00305	0.00291	0.00264
	OE	0.00000	0.00000	0.00000
	OE	0.00683	0.00665	0.00661

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00067	-0.00068	-0.00076
	OE	0.00000	0.00000	0.00000
	OE	0.00864	0.00845	0.00837
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00048	-0.00048	-0.00055
	OE	0.00000	0.00000	0.00000
	OE	0.00637	0.00620	0.00615

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00191	-0.00191	-0.00192
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00182	-0.00185	-0.00183
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00136	-0.00137	-0.00136
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00129	-0.00131	-0.00130

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00191	0.00191	0.00192
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00186	0.00186	0.00186
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00136	0.00137	0.00136
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00131	0.00131	0.00132

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00275	-0.00307	-0.00325
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00264	-0.00295	-0.00320
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00188	-0.00212	-0.00226
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00180	-0.00205	-0.00221

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00718	0.00700	0.00694
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00704	0.00685	0.00677
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00533	0.00516	0.00511
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00524	0.00508	0.00502

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__xnor2_l	0.01062	0.00954	0.10670

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	0.00015	0.00017

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xnor2_l	A->Y (RR)	B	0.82023	2.73875	11.11890
	A->Y (FR)	!B	0.72683	2.74763	14.35670
	B->Y (RR)	A	0.70582	2.61915	10.93480
	B->Y (FR)	!A	0.80251	2.89600	14.82430

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xnor2_l	A->Y (FF)	B	0.51987	1.31754	8.18232
	A->Y (RF)	!B	0.11446	0.75861	5.84972
	B->Y (FF)	A	0.51428	1.31028	8.16403
	B->Y (RF)	!A	0.11891	0.76389	5.86889

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00324	0.00296	0.00267
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00953	0.00909	0.00898
	B	A	0.00000	0.00000	0.00000
	B	A	0.00182	0.00156	0.00125
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00991	0.00957	0.00948

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01112	0.01093	0.01068
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00278	0.00258	0.00229
	B	A	0.00000	0.00000	0.00000
	B	A	0.01066	0.01053	0.01038
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00302	0.00275	0.00240

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__xor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ls__xor2_l	0.01051	0.00959	0.10703

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	0.00015	0.00017

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xor2_l	A->Y (RR)	!B	0.88648	2.79407	11.13740
	A->Y (FR)	B	0.71899	2.80034	14.74750
	B->Y (RR)	!A	0.71782	2.63161	10.97310
	B->Y (FR)	A	0.79875	2.90352	14.86060

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ls__xor2_l	A->Y (FF)	!B	0.52997	1.32293	8.18008
	A->Y (RF)	B	0.09239	0.74640	5.80637
	B->Y (FF)	!A	0.50668	1.29555	8.14238
	B->Y (RF)	A	0.10472	0.75096	5.83406

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01065	0.01026	0.01014
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00224	0.00184	0.00147
	B	A	0.00000	0.00000	0.00000
	B	A	0.01080	0.01049	0.01039
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00158	0.00132	0.00101

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00206	0.00177	0.00142
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01194	0.01180	0.01167
	B	A	0.00000	0.00000	0.00000
	B	A	0.00207	0.00177	0.00143
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01092	0.01081	0.01068

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_ls__ant	6.59340
sky130_osu_sc_18T_ls__tiehi	6.59340
sky130_osu_sc_18T_ls__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_ls__ant	0.02855
sky130_osu_sc_18T_ls__tiehi	0.00000
sky130_osu_sc_18T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__ant	0.00000	18557.20000	37114.30000
sky130_osu_sc_18T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_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_18T_ls__ant	0.00000	0.00000	0.00000
	-0.00287	-0.00084	0.01874

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ls__ant	0.00000	0.00000	0.00000
	0.32523	0.30096	0.03832