sky130_osu_sc_18T_ls_ss_1P44_-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_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.02048	0.02054	0.01605	0.65825	0.27818	0.66177
sky130_osu_sc_18T_ls__addf_l	0.02049	0.02054	0.01605	0.46889	0.27930	0.46692

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addf_1	0.00000	0.00037	0.00039
sky130_osu_sc_18T_ls__addf_l	0.00000	0.00036	0.00038

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)	0.34405	2.37168	20.22260
	B->CO (RR)	0.32104	2.28447	19.63690
	CI->CO (RR)	0.33186	2.38331	20.54840
	CON->CO (FR)	0.09842	1.38196	13.69830
sky130_osu_sc_18T_ls__addf_1	A->CO (RR)	0.34882	2.32322	17.93880
	B->CO (RR)	0.32412	2.23612	17.58260
	CI->CO (RR)	0.33650	2.33511	18.28810
	CON->CO (FR)	0.11549	1.51441	13.80330

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)	0.89679	4.65864	37.12590
	B->CO (FF)	0.82950	4.49689	36.24340
	CI->CO (FF)	0.81618	4.52900	36.83710
	CON->CO (RF)	0.04005	0.69576	7.35572
sky130_osu_sc_18T_ls__addf_1	A->CO (FF)	0.87720	4.19925	29.87870
	B->CO (FF)	0.81048	4.05744	29.22160
	CI->CO (FF)	0.79678	4.07136	29.58380
	CON->CO (RF)	0.04440	0.73717	7.45941

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)	0.65199	2.25195	14.22500
	B->CON (FR)	0.59386	2.15342	13.94050
	CI->CON (FR)	0.57171	2.12239	13.94160
sky130_osu_sc_18T_ls__addf_l	A->CON (FR)	0.61821	2.22022	14.22000
	B->CON (FR)	0.56163	2.12288	13.93560
	CI->CON (FR)	0.53784	2.09072	13.93670

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)	0.14555	0.76417	6.15851
	B->CON (RF)	0.13315	0.75233	6.21022
	CI->CON (RF)	0.13341	0.77745	6.44515
sky130_osu_sc_18T_ls__addf_l	A->CON (RF)	0.13961	0.75924	6.15919
	B->CON (RF)	0.12779	0.74800	6.21094
	CI->CON (RF)	0.12743	0.77215	6.44592

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)	1.19688	5.06534	35.91040
	B->S (-R)	1.14695	4.96774	35.43310
	CI->S (-R)	1.11164	4.92527	35.59760
	CON->S (RR)	0.21934	1.39796	10.23790
sky130_osu_sc_18T_ls__addf_l	A->S (-R)	1.13714	4.61031	29.75310
	B->S (-R)	1.09025	4.52919	29.41780
	CI->S (-R)	1.05179	4.47514	29.44090
	CON->S (RR)	0.22514	1.49890	10.09090

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)	0.71100	2.23191	14.54020
	B->S (-F)	0.78307	2.21298	14.19640
	CI->S (-F)	0.69784	2.23627	14.85010
	CON->S (FF)	0.35892	1.16438	8.21525
sky130_osu_sc_18T_ls__addf_l	A->S (-F)	0.66395	2.04802	12.43470
	B->S (-F)	0.73662	2.03312	12.22590
	CI->S (-F)	0.65052	2.05257	12.78130
	CON->S (FF)	0.33706	1.17244	8.10466

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	0.00300	0.00293	0.00281
	B	0.00364	0.00373	0.00365
	CI	0.00399	0.00408	0.00401
sky130_osu_sc_18T_ls__addf_l	A	0.00229	0.00218	0.00203
	B	0.00294	0.00295	0.00280
	CI	0.00328	0.00331	0.00323

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01164	0.01163	0.01154
	B	0.01143	0.01152	0.01144
	CI	0.01000	0.01026	0.01016
sky130_osu_sc_18T_ls__addf_l	A	0.01093	0.01089	0.01080
	B	0.01072	0.01078	0.01070
	CI	0.00928	0.00951	0.00943

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01163	0.01162	0.01156
	B	0.01142	0.01149	0.01142
	CI	0.00999	0.01018	0.01015
sky130_osu_sc_18T_ls__addf_l	A	0.01093	0.01089	0.01082
	B	0.01072	0.01077	0.01069
	CI	0.00928	0.00946	0.00942

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.00297	0.00290	0.00276
	B	0.00361	0.00367	0.00343
	CI	0.00398	0.00407	0.00394
sky130_osu_sc_18T_ls__addf_l	A	0.00226	0.00215	0.00194
	B	0.00291	0.00291	0.00266
	CI	0.00327	0.00330	0.00315

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.01164	0.01164	0.01160
	B	0.01144	0.01153	0.01144
	CI	0.01000	0.01027	0.01020
sky130_osu_sc_18T_ls__addf_l	A	0.01094	0.01090	0.01082
	B	0.01073	0.01079	0.01068
	CI	0.00929	0.00952	0.00941

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__addf_1	A	0.02438	0.02455	0.02443
	B	0.02211	0.02184	0.02159
	CI	0.01949	0.01959	0.01951
sky130_osu_sc_18T_ls__addf_l	A	0.02341	0.02345	0.02331
	B	0.02116	0.02081	0.02055
	CI	0.01857	0.01854	0.01841

SKY130_OSU_SC_18T_LS__ADDHx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.01017	0.01094	0.65065	0.29281	0.66889
sky130_osu_sc_18T_ls__addh_l	0.01018	0.01095	0.38075	0.29388	0.38261

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__addh_1	0.00000	0.00031	0.00036
sky130_osu_sc_18T_ls__addh_l	0.00000	0.00038	0.00041

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)	0.25735	1.39617	9.83528
	B->CO (RR)	0.26276	1.39389	9.99178
sky130_osu_sc_18T_ls__addh_l	A->CO (RR)	0.27658	1.60233	9.99861
	B->CO (RR)	0.28229	1.60203	10.17010

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)	0.30799	1.09513	8.20197
	B->CO (FF)	0.32650	1.11118	8.26253
sky130_osu_sc_18T_ls__addh_l	A->CO (FF)	0.29689	1.11304	8.02311
	B->CO (FF)	0.31491	1.13024	8.09140

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	0.38243	1.20566	6.03673
	A->CON (FR)	!B	0.40056	1.94425	13.88510
	B->CON (RR)	A	0.38827	1.20315	6.19355
	B->CON (FR)	!A	0.46383	2.05245	14.16690
sky130_osu_sc_18T_ls__addh_l	A->CON (RR)	B	0.34039	1.15695	5.90002
	A->CON (FR)	!B	0.35527	1.87442	13.86460
	B->CON (RR)	A	0.34671	1.15622	6.07330
	B->CON (FR)	!A	0.41851	2.00786	14.14100

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	0.38789	1.15480	7.73630
	A->CON (RF)	!B	0.09264	0.73359	6.41513
	B->CON (FF)	A	0.40267	1.18457	7.91426
	B->CON (RF)	!A	0.10216	0.72889	6.27731
sky130_osu_sc_18T_ls__addh_l	A->CON (FF)	B	0.34469	1.10645	7.56384
	A->CON (RF)	!B	0.08506	0.72610	6.41173
	B->CON (FF)	A	0.35920	1.13744	7.74845
	B->CON (RF)	!A	0.09487	0.72200	6.27429

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	0.26591	2.28707	20.40520
	A->S (FR)	B	0.56270	2.67698	21.21080
	B->S (RR)	!A	0.27248	2.22910	19.80040
	B->S (FR)	A	0.58212	2.75932	21.89280
	CON->S (FR)	-	0.10455	1.41179	13.98060
sky130_osu_sc_18T_ls__addh_l	A->S (RR)	!B	0.28025	2.24024	17.10780
	A->S (FR)	B	0.54233	2.60766	17.88570
	B->S (RR)	!A	0.28807	2.20251	16.76240
	B->S (FR)	A	0.56045	2.67047	18.30250
	CON->S (FR)	-	0.13580	1.63905	14.12100

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	0.59988	4.18708	35.93150
	A->S (RF)	B	0.51048	2.46636	17.95500
	B->S (FF)	!A	0.66305	4.29825	36.25550
	B->S (RF)	A	0.51659	2.46264	18.11500
	CON->S (RF)	-	0.03771	0.68702	7.29517
sky130_osu_sc_18T_ls__addh_l	A->S (FF)	!B	0.56318	3.43890	24.96810
	A->S (RF)	B	0.47422	2.09736	12.48260
	B->S (FF)	!A	0.62667	3.55068	25.25890
	B->S (RF)	A	0.48044	2.09632	12.65510
	CON->S (RF)	-	0.04441	0.73699	7.28414

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	0.00517	0.00499	0.00476
	B	0.00000	0.00000	0.00000
	B	0.00480	0.00463	0.00440
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00416	0.00392	0.00373
	B	0.00000	0.00000	0.00000
	B	0.00381	0.00357	0.00338

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	0.00819	0.00802	0.00749
	B	0.00000	0.00000	0.00000
	B	0.00852	0.00853	0.00807
sky130_osu_sc_18T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00719	0.00698	0.00664
	B	0.00000	0.00000	0.00000
	B	0.00752	0.00749	0.00722

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	0.00516	0.00497	0.00480
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00710	0.00704	0.00703
	B	A	0.00000	0.00000	0.00000
	B	A	0.00479	0.00462	0.00446
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00769	0.00762	0.00760
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00417	0.00391	0.00372
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00644	0.00637	0.00634
	B	A	0.00000	0.00000	0.00000
	B	A	0.00380	0.00355	0.00337
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00703	0.00694	0.00691

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	0.00819	0.00804	0.00781
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00122	0.00121	0.00106
	B	A	0.00000	0.00000	0.00000
	B	A	0.00852	0.00853	0.00840
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00190	0.00182	0.00162
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00719	0.00699	0.00666
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00038	0.00035	0.00013
	B	A	0.00000	0.00000	0.00000
	B	A	0.00752	0.00749	0.00725
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00105	0.00096	0.00069

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	0.00820	0.00803	0.00781
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00123	0.00125	0.00120
	B	A	0.00000	0.00000	0.00000
	B	A	0.00853	0.00854	0.00844
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00192	0.00185	0.00178
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00720	0.00699	0.00684
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00038	0.00037	0.00016
	B	A	0.00000	0.00000	0.00000
	B	A	0.00753	0.00749	0.00743
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00107	0.00097	0.00077

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	0.00517	0.00498	0.00477
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00710	0.00711	0.00705
	B	A	0.00000	0.00000	0.00000
	B	A	0.00480	0.00462	0.00439
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00768	0.00767	0.00766
sky130_osu_sc_18T_ls__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00416	0.00392	0.00374
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00644	0.00640	0.00636
	B	A	0.00000	0.00000	0.00000
	B	A	0.00380	0.00356	0.00339
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00702	0.00696	0.00693

SKY130_OSU_SC_18T_LS__AND2x

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00545	0.00552	0.67021
sky130_osu_sc_18T_ls__and2_2	0.00545	0.00552	1.33261
sky130_osu_sc_18T_ls__and2_4	0.00545	0.00551	2.58290
sky130_osu_sc_18T_ls__and2_6	0.00548	0.00551	3.82184
sky130_osu_sc_18T_ls__and2_8	0.00546	0.00552	5.01167
sky130_osu_sc_18T_ls__and2_l	0.00416	0.00423	0.47009

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__and2_1	0.00000	0.00014	0.00019
sky130_osu_sc_18T_ls__and2_2	0.00000	0.00020	0.00023
sky130_osu_sc_18T_ls__and2_4	0.00000	0.00033	0.00035
sky130_osu_sc_18T_ls__and2_6	0.00000	0.00046	0.00050
sky130_osu_sc_18T_ls__and2_8	0.00000	0.00059	0.00064
sky130_osu_sc_18T_ls__and2_l	0.00000	0.00012	0.00016

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)	0.19946	1.31049	9.58698
	B->Y (RR)	0.20717	1.31752	9.79578
sky130_osu_sc_18T_ls__and2_2	A->Y (RR)	0.22140	1.19145	9.93239
	B->Y (RR)	0.22906	1.18991	10.09290
sky130_osu_sc_18T_ls__and2_4	A->Y (RR)	0.30417	1.18411	10.44290
	B->Y (RR)	0.31153	1.17493	10.54510
sky130_osu_sc_18T_ls__and2_6	A->Y (RR)	0.38532	1.22740	10.84610
	B->Y (RR)	0.39260	1.21796	10.90040
sky130_osu_sc_18T_ls__and2_8	A->Y (RR)	0.46668	1.29636	11.19870
	B->Y (RR)	0.47416	1.28618	11.22940
sky130_osu_sc_18T_ls__and2_l	A->Y (RR)	0.23172	1.46788	9.83109
	B->Y (RR)	0.23985	1.47288	10.03510

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)**	0.22373	0.98933	7.77180
	B->Y (FF)	0.24230	1.00821	7.87251
sky130_osu_sc_18T_ls__and2_2	**A->Y (FF)**	0.28331	1.01811	8.11291
	B->Y (FF)	0.30324	1.03846	8.19687
sky130_osu_sc_18T_ls__and2_4	**A->Y (FF)**	0.42103	1.15389	8.63528
	B->Y (FF)	0.44116	1.17568	8.69686
sky130_osu_sc_18T_ls__and2_6	**A->Y (FF)**	0.56075	1.30421	9.02479
	B->Y (FF)	0.58108	1.32623	9.07253
sky130_osu_sc_18T_ls__and2_8	**A->Y (FF)**	0.69459	1.44908	9.30851
	B->Y (FF)	0.71560	1.47178	9.35183
sky130_osu_sc_18T_ls__and2_l	**A->Y (FF)**	0.24277	1.04297	7.81697
	B->Y (FF)	0.26394	1.06432	7.92620

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	0.00431	0.00394	0.00373
	B	0.00000	0.00000	0.00000
	B	0.00437	0.00397	0.00378
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00831	0.00815	0.00814
	B	0.00000	0.00000	0.00000
	B	0.00838	0.00824	0.00808
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01699	0.01716	0.01728
	B	0.00000	0.00000	0.00000
	B	0.01702	0.01731	0.01735
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02556	0.02601	0.02664
	B	0.00000	0.00000	0.00000
	B	0.02562	0.02635	0.02680
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03408	0.03505	0.03571
	B	0.00000	0.00000	0.00000
	B	0.03420	0.03531	0.03580
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00316	0.00288	0.00271
	B	0.00000	0.00000	0.00000
	B	0.00322	0.00293	0.00278

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	0.00998	0.00984	0.00968
	B	0.00000	0.00000	0.00000
	B	0.01113	0.01097	0.01084
sky130_osu_sc_18T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01267	0.01294	0.01287
	B	0.00000	0.00000	0.00000
	B	0.01383	0.01411	0.01403
sky130_osu_sc_18T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01920	0.02045	0.02052
	B	0.00000	0.00000	0.00000
	B	0.02035	0.02153	0.02159
sky130_osu_sc_18T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02582	0.02788	0.02829
	B	0.00000	0.00000	0.00000
	B	0.02693	0.02889	0.02929
sky130_osu_sc_18T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03215	0.03498	0.03590
	B	0.00000	0.00000	0.00000
	B	0.03332	0.03594	0.03678
sky130_osu_sc_18T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00762	0.00747	0.00734
	B	0.00000	0.00000	0.00000
	B	0.00846	0.00830	0.00818

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)	-0.00362	-0.00364	-0.00366
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00362	-0.00364	-0.00366
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00361	-0.00364	-0.00366
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00363	-0.00366	-0.00367
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00361	-0.00363	-0.00365
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00263	-0.00264	-0.00265

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)	0.00365	0.00373	0.00367
sky130_osu_sc_18T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00365	0.00373	0.00367
sky130_osu_sc_18T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00365	0.00369	0.00367
sky130_osu_sc_18T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00367	0.00371	0.00368
sky130_osu_sc_18T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00365	0.00369	0.00367
sky130_osu_sc_18T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00265	0.00270	0.00266

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)	-0.00343	-0.00345	-0.00345
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00343	-0.00345	-0.00345
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00344	-0.00345	-0.00345
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00344	-0.00344	-0.00345
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00344	-0.00347	-0.00345
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00249	-0.00251	-0.00250

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)	0.00343	0.00351	0.00346
sky130_osu_sc_18T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00343	0.00351	0.00346
sky130_osu_sc_18T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00344	0.00351	0.00346
sky130_osu_sc_18T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00344	0.00351	0.00346
sky130_osu_sc_18T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00344	0.00350	0.00346
sky130_osu_sc_18T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00249	0.00254	0.00251

SKY130_OSU_SC_18T_LS__AOI21

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00504	0.00528	0.00519	0.28666

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi21_l	0.00000	0.00008	0.00011

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)	0.33715	1.96272	14.15310
	A1->Y (FR)	0.28803	1.87039	13.87490
	B0->Y (FR)	0.26843	1.84362	13.88060

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)	0.07409	0.68242	6.03284
	A1->Y (RF)	0.06693	0.69008	6.18598
	B0->Y (RF)	0.05090	0.67506	6.34716

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	0.00803	0.00792	0.00790
	A1	0.00000	0.00000	0.00000
	A1	0.00684	0.00668	0.00666
	B0	0.00669	0.00650	0.00647

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	0.00098	0.00077	0.00064
	A1	0.00000	0.00000	0.00000
	A1	0.00100	0.00078	0.00063
	B0	-0.00078	-0.00079	-0.00090

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)	-0.00309	-0.00320	-0.00316
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00325	-0.00328	-0.00326
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00325	-0.00327	-0.00326

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)	0.00314	0.00320	0.00316
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00325	0.00328	0.00327
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00325	0.00327	0.00327

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)	-0.00305	-0.00313	-0.00312
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00321	-0.00323	-0.00322
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00345	-0.00348	-0.00349

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)	0.00310	0.00314	0.00312
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00321	0.00328	0.00323
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00348	0.00357	0.00350

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)	-0.00191	-0.00193	-0.00191

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)	0.00209	0.00210	0.00196

SKY130_OSU_SC_18T_LS__AOI22

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00505	0.00529	0.00555	0.00529	0.28049

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__aoi22_1	0.00000	0.00011	0.00014

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)	0.43162	2.06551	14.20450
	A1->Y (FR)	0.38371	1.99350	14.03940
	B0->Y (FR)	0.28918	1.81976	13.73130
	B1->Y (FR)	0.33689	1.91727	13.91220

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)	0.09196	0.70015	6.01818
	A1->Y (RF)	0.08485	0.70791	6.16983
	B0->Y (RF)	0.05941	0.67552	6.11667
	B1->Y (RF)	0.06623	0.66709	5.96983

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	0.00982	0.00970	0.00966
	A1	0.00866	0.00847	0.00843
	B0	0.00721	0.00695	0.00689
	B1	0.00833	0.00813	0.00808

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__aoi22_l	A0	0.00247	0.00231	0.00208
	A1	0.00249	0.00231	0.00209
	B0	-0.00038	-0.00040	-0.00051
	B1	-0.00037	-0.00039	-0.00049

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)	-0.00309	-0.00316	-0.00315
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00325	-0.00327	-0.00326
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00325	-0.00327	-0.00326
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00325	-0.00327	-0.00326

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)	0.00313	0.00320	0.00315
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00325	0.00328	0.00327
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00325	0.00327	0.00327
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00325	0.00327	0.00327

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)	-0.00306	-0.00316	-0.00312
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00321	-0.00323	-0.00322
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00345	-0.00348	-0.00349
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00345	-0.00348	-0.00349

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)	0.00310	0.00317	0.00312
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00321	0.00328	0.00323
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00348	0.00356	0.00350
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00348	0.00356	0.00350

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)	-0.00191	-0.00195	-0.00192
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00191	-0.00192	-0.00192
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00354	-0.00356	-0.00358
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00354	-0.00356	-0.00358

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)	0.00208	0.00210	0.00196
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00191	0.00192	0.00192
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00357	0.00358	0.00359
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00357	0.00358	0.00359

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)	-0.00192	-0.00195	-0.00193
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00192	-0.00193	-0.00193
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00330	-0.00332	-0.00331
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00330	-0.00332	-0.00331

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)	0.00209	0.00210	0.00197
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00192	0.00194	0.00193
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00330	0.00335	0.00332
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00330	0.00335	0.00332

SKY130_OSU_SC_18T_LS__BUFx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00555	0.65365
sky130_osu_sc_18T_ls__buf_2	0.00555	1.32434
sky130_osu_sc_18T_ls__buf_4	0.00555	2.54625
sky130_osu_sc_18T_ls__buf_6	0.00099	1.80000
sky130_osu_sc_18T_ls__buf_8	0.00555	4.97753
sky130_osu_sc_18T_ls__buf_l	0.00430	0.46926

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__buf_1	0.00000	0.00011	0.00011
sky130_osu_sc_18T_ls__buf_2	0.00000	0.00017	0.00019
sky130_osu_sc_18T_ls__buf_4	0.00000	0.00028	0.00033
sky130_osu_sc_18T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ls__buf_8	0.00000	0.00051	0.00062
sky130_osu_sc_18T_ls__buf_l	0.00000	0.00010	0.00010

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)	0.15485	1.24625	9.31413
sky130_osu_sc_18T_ls__buf_2	A->Y (RR)	0.15963	1.11715	9.74916
sky130_osu_sc_18T_ls__buf_4	A->Y (RR)	0.21141	1.07593	10.12690
sky130_osu_sc_18T_ls__buf_8	A->Y (RR)	0.31510	1.12680	10.78670
sky130_osu_sc_18T_ls__buf_l	A->Y (RR)	0.17886	1.40473	9.68115

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)	0.21113	0.97011	7.65494
sky130_osu_sc_18T_ls__buf_2	A->Y (FF)	0.27242	1.00517	8.06444
sky130_osu_sc_18T_ls__buf_4	A->Y (FF)	0.41078	1.14031	8.57973
sky130_osu_sc_18T_ls__buf_8	A->Y (FF)	0.68582	1.43792	9.27582
sky130_osu_sc_18T_ls__buf_l	A->Y (FF)	0.23311	1.02996	7.76036

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	0.00396	0.00351	0.00333
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00799	0.00773	0.00752
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01671	0.01684	0.01670
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03394	0.03447	0.03507
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00300	0.00264	0.00248

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	0.00972	0.00953	0.00942
sky130_osu_sc_18T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01237	0.01259	0.01253
sky130_osu_sc_18T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01893	0.02008	0.02013
sky130_osu_sc_18T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03194	0.03457	0.03537
sky130_osu_sc_18T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00750	0.00730	0.00720

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
	-0.00050	-0.00050	-0.00050

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
	0.00050	0.00050	0.00050

SKY130_OSU_SC_18T_LS__DFFRx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00520	0.00529	0.01585	0.66484	0.65773
sky130_osu_sc_18T_ls__dffr_l	0.00520	0.00529	0.01584	0.46782	0.46657

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffr_1	0.00000	0.00059	0.00067
sky130_osu_sc_18T_ls__dffr_l	0.00000	0.00058	0.00066

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)	1.14270	2.79934	15.04630
	QN->Q (FR)	0.10833	1.47547	14.55930
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RR)	1.10897	2.90828	14.85280
	QN->Q (FR)	0.12142	1.56908	14.24680

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)	1.00011	2.95380	18.40660
	QN->Q (RF)	0.04637	0.77723	8.25523
	RN->Q (FF)	0.68854	2.82799	21.37550
sky130_osu_sc_18T_ls__dffr_l	CK->Q (RF)	1.02407	3.20126	18.38810
	QN->Q (RF)	0.04908	0.79895	8.08965
	RN->Q (FF)	0.71388	3.07335	21.34910

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)	0.88760	2.01305	10.45590
	RN->QN (FR)	0.57466	1.88582	13.42840
sky130_osu_sc_18T_ls__dffr_l	CK->QN (RR)	0.89254	2.12000	10.43210
	RN->QN (FR)	0.58096	1.99345	13.39710

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)**	0.96673	1.62882	5.37836
sky130_osu_sc_18T_ls__dffr_l	**CK->QN (RF)**	0.91999	1.59394	5.27731

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)	-0.12229	-0.16044	-0.90859
	setup	CK (R)	0.88114	0.87618	1.77003
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.12545	-0.16158	-0.90684
	setup	CK (R)	0.88758	0.87900	1.79830

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)	-0.51233	-0.98369	-11.33070
	setup	CK (R)	0.57943	1.02701	11.41130
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.51250	-0.98355	-11.33030
	setup	CK (R)	0.57869	1.02701	11.41110

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)	-0.12229	-0.16044	-0.90859
	setup	CK (R)	0.88114	0.87618	1.77003
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.12545	-0.16158	-0.90684
	setup	CK (R)	0.88758	0.87900	1.79830

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)	-0.51233	-0.98369	-11.33070
	setup	CK (R)	0.57943	1.02701	11.41130
sky130_osu_sc_18T_ls__dffr_l	hold	CK (R)	-0.51250	-0.98355	-11.33030
	setup	CK (R)	0.57869	1.02701	11.41110

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)	0.80357	0.80267	1.50655
	removal	CK (R)	-0.11433	-0.13894	-0.07577
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.80761	0.80529	1.51045
	removal	CK (R)	-0.11433	-0.13894	-0.07577

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)	0.80357	0.80267	1.50655
	removal	CK (R)	-0.11433	-0.13894	-0.07577
sky130_osu_sc_18T_ls__dffr_l	recovery	CK (R)	0.80761	0.80529	1.51045
	removal	CK (R)	-0.11433	-0.13894	-0.07577

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 ()	0.43609	0.85177	13.33370
	min_pulse_width	RN ()	0.43287	0.85177	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	RN ()	0.43396	0.84747	13.33370
	min_pulse_width	RN ()	0.42755	0.84747	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffr_1	min_pulse_width	CK ()	0.48657	0.59815	13.33370
	min_pulse_width	CK ()	0.52897	0.59815	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	0.43524	0.59815	13.33370
	min_pulse_width	CK ()	0.51781	0.59815	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 ()	1.15550	1.22575	13.33370
	min_pulse_width	CK ()	0.47217	0.88401	13.33370
sky130_osu_sc_18T_ls__dffr_l	min_pulse_width	CK ()	1.15720	1.23005	13.33370
	min_pulse_width	CK ()	0.47217	0.88401	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	0.00931	0.00828	0.00097
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00817	0.00734	0.00341

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	0.01077	0.01037	0.00863
	RN	-0.00138	-0.03792	-0.34465
	RN	0.02419	0.02393	0.02195
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00961	0.00923	0.00821
	RN	-0.00138	-0.03071	-0.24252
	RN	0.02302	0.02278	0.02153

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	0.01078	0.01037	0.00867
	RN	-0.00138	-0.03768	-0.34097
	RN	0.02419	0.02393	0.02201
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00961	0.00924	0.00822
	RN	-0.00138	-0.03066	-0.24187
	RN	0.02302	0.02278	0.02155

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	0.00928	0.00826	0.00078
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00814	0.00731	0.00317

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	-0.00306	-0.00315	-0.00314
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01054	0.01018	0.00983
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00467	0.00435	0.00404
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00306	-0.00315	-0.00314
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01054	0.01018	0.00983
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00467	0.00435	0.00404

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	0.00312	0.00315	0.00314
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01839	0.01819	0.01788
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00849	0.00829	0.00824
sky130_osu_sc_18T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00312	0.00315	0.00314
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01839	0.01819	0.01788
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00849	0.00829	0.00824

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)	0.00379	0.00337	0.00311
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01012	0.00951	0.00907
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)	0.00379	0.00337	0.00311
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01012	0.00951	0.00907

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)	0.00858	0.00825	0.00817
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01841	0.01798	0.01760
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)	0.00858	0.00825	0.00817
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01841	0.01798	0.01760

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)	-0.00063	-0.00110	-0.00143
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00522	0.00436	0.00361
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00089	-0.00140	-0.00175
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00063	-0.00110	-0.00143
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00522	0.00436	0.00361
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00089	-0.00140	-0.00175

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)	0.01421	0.01386	0.01366
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02886	0.02837	0.02738
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02234	0.02213	0.02159
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02905	0.02831	0.02773
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01553	0.01514	0.01504
sky130_osu_sc_18T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01421	0.01386	0.01366
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02886	0.02836	0.02738
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02234	0.02213	0.02159
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02905	0.02831	0.02773
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01553	0.01514	0.01504

SKY130_OSU_SC_18T_LS__DFFSRx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00516	0.00530	0.01114	0.01612	0.65858	0.66366
sky130_osu_sc_18T_ls__dffsr_l	0.00516	0.00530	0.01113	0.01611	0.46060	0.46720

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffsr_1	0.00000	0.00062	0.00072
sky130_osu_sc_18T_ls__dffsr_l	0.00000	0.00060	0.00071

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)	1.10467	2.71383	14.65570
	QN->Q (FR)	0.10429	1.43858	14.21640
	RN->Q (RR)	0.90845	2.53025	14.60860
	SN->Q (FR)	0.90916	2.69727	18.22650
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RR)	1.10328	2.89009	14.78090
	QN->Q (FR)	0.12127	1.55759	14.11310
	RN->Q (RR)	0.90898	2.70746	14.73640
	SN->Q (FR)	0.90995	2.87497	18.32500

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)	1.07889	2.99008	18.00320
	QN->Q (RF)	0.04232	0.73777	7.86945
	RN->Q (FF)	0.72920	2.81828	21.00480
sky130_osu_sc_18T_ls__dffsr_l	CK->Q (RF)	1.11371	3.27828	18.24700
	QN->Q (RF)	0.04897	0.79505	8.04448
	RN->Q (FF)	0.76541	3.10429	21.23950

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)	0.96903	2.09143	10.48290
	RN->QN (FR)	0.62013	1.91700	13.49330
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RR)	0.98072	2.21542	10.53440
	RN->QN (FR)	0.63254	2.04211	13.53420

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)	0.94519	1.59331	5.37521
	RN->QN (RF)	0.74749	1.41459	5.32934
	SN->QN (FF)	0.74862	1.58171	8.93941
sky130_osu_sc_18T_ls__dffsr_l	CK->QN (RF)	0.92244	1.59624	5.40076
	RN->QN (RF)	0.72566	1.41877	5.35690
	SN->QN (FF)	0.72308	1.58129	8.93881

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)	-0.13683	-0.17601	-0.99801
	setup	CK (R)	0.83377	0.81823	1.70751
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.13858	-0.17572	-0.99817
	setup	CK (R)	0.83444	0.81818	1.70918

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)	-0.56980	-1.03710	-11.50530
	setup	CK (R)	0.64626	1.07030	11.56260
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.56903	-1.03662	-11.50330
	setup	CK (R)	0.64367	1.07030	11.56210

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)	-0.13683	-0.17601	-0.99801
	setup	CK (R)	0.83377	0.81823	1.70751
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.13858	-0.17572	-0.99817
	setup	CK (R)	0.83444	0.81818	1.70918

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)	-0.56980	-1.03710	-11.50530
	setup	CK (R)	0.64626	1.07030	11.56260
sky130_osu_sc_18T_ls__dffsr_l	hold	CK (R)	-0.56903	-1.03662	-11.50330
	setup	CK (R)	0.64367	1.07030	11.56210

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)	0.70571	0.69828	1.37843
	removal	CK (R)	-0.06357	-0.07689	-0.06953
	hold	SN (R)	-0.72717	-1.05250	-8.54668
	setup	SN (R)	0.75931	1.10967	9.56260
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.70453	0.69803	1.38408
	removal	CK (R)	-0.06225	-0.07689	-0.06953
	hold	SN (R)	-0.68278	-1.01225	-8.48057
	setup	SN (R)	0.75751	1.08039	9.50020

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)	0.70571	0.69828	1.37843
	removal	CK (R)	-0.06357	-0.07689	-0.06953
	hold	SN (R)	-0.73843	-1.05491	-8.54668
	hold	SN (R)	-0.72717	-1.05250	-8.56665
	setup	SN (R)	0.75931	1.10158	9.54706
	setup	SN (R)	0.74477	1.10967	9.56260
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.70453	0.69803	1.38408
	removal	CK (R)	-0.06225	-0.07689	-0.06953
	hold	SN (R)	-0.71953	-1.02702	-8.48057
	hold	SN (R)	-0.68278	-1.01225	-8.48710
	setup	SN (R)	0.75751	1.07058	9.46749
	setup	SN (R)	0.69898	1.08039	9.50020

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 ()	0.49239	0.89045	13.33370
	min_pulse_width	RN ()	0.49576	0.89045	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	RN ()	0.49896	0.88401	13.33370
	min_pulse_width	RN ()	0.49679	0.88616	13.33370

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)	0.06671	0.09372	0.76437
	removal	CK (R)	-0.01563	-0.05157	-0.56571
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.06430	0.09372	0.74995
	removal	CK (R)	-0.01563	-0.05157	-0.55980

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)	0.06671	0.09372	0.76437
	removal	CK (R)	-0.01563	-0.05157	-0.56571
sky130_osu_sc_18T_ls__dffsr_l	recovery	CK (R)	0.06430	0.09372	0.74995
	removal	CK (R)	-0.01563	-0.05157	-0.55980

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 ()	0.75104	1.16772	13.33370
	min_pulse_width	SN ()	0.74482	1.17202	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	SN ()	0.74278	1.13763	13.33370
	min_pulse_width	SN ()	0.70023	1.14623	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffsr_1	min_pulse_width	CK ()	0.46425	0.59815	13.33370
	min_pulse_width	CK ()	0.55798	0.59815	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	0.43747	0.59815	13.33370
	min_pulse_width	CK ()	0.54905	0.59815	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 ()	1.11142	1.17417	13.33370
	min_pulse_width	CK ()	0.54497	0.92914	13.33370
sky130_osu_sc_18T_ls__dffsr_l	min_pulse_width	CK ()	1.10959	1.16987	13.33370
	min_pulse_width	CK ()	0.54144	0.92914	13.33370

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	0.01130	0.01053	0.00558
	RN	0.02146	0.02088	0.01597
	SN	-0.00138	-0.03771	-0.34141
	SN	0.02325	0.02276	0.01811
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01026	0.00944	0.00566
	RN	0.02042	0.01978	0.01593
	SN	-0.00138	-0.03043	-0.23877
	SN	0.02220	0.02167	0.01806

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	0.01205	0.01170	0.01030
	RN	-0.00138	-0.03771	-0.34141
	RN	0.02504	0.02478	0.02312
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01099	0.01064	0.00969
	RN	-0.00138	-0.03043	-0.23877
	RN	0.02396	0.02370	0.02252

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	0.01207	0.01172	0.01032
	RN	-0.00138	-0.03788	-0.34404
	RN	0.02504	0.02479	0.02316
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01101	0.01066	0.00971
	RN	-0.00138	-0.03069	-0.24220
	RN	0.02397	0.02371	0.02247

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	0.01126	0.01049	0.00523
	RN	0.02142	0.02083	0.01566
	SN	-0.00138	-0.03788	-0.34403
	SN	0.02321	0.02272	0.01763
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01022	0.00940	0.00535
	RN	0.02037	0.01973	0.01568
	SN	-0.00138	-0.03069	-0.24218
	SN	0.02216	0.02162	0.01766

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	-0.00306	-0.00315	-0.00315
	(!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)	0.01349	0.01316	0.01284
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00535	0.00505	0.00474
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00531	0.00501	0.00470
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00538	0.00508	0.00478
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00306	-0.00315	-0.00315
	(!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)	0.01349	0.01316	0.01284
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00535	0.00505	0.00474
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00531	0.00501	0.00470
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00538	0.00508	0.00478

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	0.00312	0.00315	0.00315
	(!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)	0.02050	0.02032	0.01986
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00903	0.00884	0.00880
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00907	0.00889	0.00884
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00900	0.00881	0.00876
sky130_osu_sc_18T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00312	0.00315	0.00315
	(!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)	0.02049	0.02031	0.01986
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00902	0.00884	0.00879
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00907	0.00888	0.00883
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00899	0.00880	0.00875

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)	0.00384	0.00343	0.00304
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01242	0.01179	0.01125
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)	0.00384	0.00343	0.00304
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01242	0.01179	0.01125

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)	0.00935	0.00902	0.00893
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01958	0.01912	0.01866
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)	0.00934	0.00901	0.00893
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01957	0.01911	0.01865

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)	-0.00717	-0.00721	-0.00726
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00732	-0.00740	-0.00741
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00710	-0.00719	-0.00716
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00398	0.00367	0.00317
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)	-0.00717	-0.00722	-0.00726
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00731	-0.00739	-0.00740
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00710	-0.00719	-0.00716
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00399	0.00367	0.00318

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)	0.00723	0.00740	0.00728
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00737	0.00746	0.00741
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00713	0.00721	0.00716
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01441	0.01414	0.01411
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)	0.00723	0.00740	0.00728
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00735	0.00745	0.00740
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00713	0.00720	0.00716
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01440	0.01414	0.01411

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)	-0.00063	-0.00110	-0.00144
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00595	0.00514	0.00441
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00588	0.00512	0.00434
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00073	-0.00124	-0.00159
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00472	0.00381	0.00318
sky130_osu_sc_18T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00063	-0.00110	-0.00144
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00594	0.00513	0.00440
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00587	0.00512	0.00433
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00073	-0.00124	-0.00159
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00472	0.00381	0.00318

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)	0.03193	0.03145	0.03048
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01425	0.01389	0.01369
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02280	0.02255	0.02202
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02284	0.02264	0.02214
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03112	0.03036	0.02956
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01539	0.01506	0.01490
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01854	0.01780	0.01752
sky130_osu_sc_18T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03193	0.03145	0.03048
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01425	0.01389	0.01369
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02280	0.02255	0.02202
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02284	0.02264	0.02214
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03112	0.03035	0.02962
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01539	0.01506	0.01490
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01853	0.01779	0.01751

SKY130_OSU_SC_18T_LS__DFFSx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00519	0.00890	0.01578	0.65989	0.66268
sky130_osu_sc_18T_ls__dffs_l	0.00519	0.00890	0.01578	0.46880	0.47065

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dffs_1	0.00000	0.00054	0.00064
sky130_osu_sc_18T_ls__dffs_l	0.00000	0.00053	0.00063

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)	0.69647	2.29633	14.45820
	QN->Q (FR)	0.10813	1.46411	14.38020
	SN->Q (FR)	0.60504	2.38456	18.07800
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RR)	0.69407	2.45475	14.42960
	QN->Q (FR)	0.12115	1.55745	14.22200
	SN->Q (FR)	0.60000	2.54918	18.00880

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)	1.08599	3.03204	18.33810
	QN->Q (RF)	0.04599	0.77229	8.21264
sky130_osu_sc_18T_ls__dffs_l	CK->Q (RF)	1.10217	3.27828	18.46660
	QN->Q (RF)	0.04877	0.79687	8.07686

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)	0.97075	2.10159	10.56420
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RR)	0.96816	2.20182	10.54850

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)	0.54904	1.15889	4.93551
	SN->QN (FF)	0.45327	1.25581	8.55897
sky130_osu_sc_18T_ls__dffs_l	CK->QN (RF)	0.53038	1.15947	4.87865
	SN->QN (FF)	0.43323	1.25611	8.46206

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)	-0.09406	-0.13467	-0.84595
	setup	CK (R)	0.48532	0.47455	1.45474
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.09591	-0.13396	-0.84824
	setup	CK (R)	0.48302	0.47518	1.45905

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)	-0.51895	-0.99357	-11.37620
	setup	CK (R)	0.63304	1.04141	11.45940
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.51823	-0.99433	-11.37740
	setup	CK (R)	0.63291	1.04141	11.45940

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)	-0.09406	-0.13467	-0.84595
	setup	CK (R)	0.48532	0.47455	1.45474
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.09591	-0.13396	-0.84824
	setup	CK (R)	0.48302	0.47518	1.45905

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)	-0.51895	-0.99357	-11.37620
	setup	CK (R)	0.63304	1.04141	11.45940
sky130_osu_sc_18T_ls__dffs_l	hold	CK (R)	-0.51823	-0.99433	-11.37740
	setup	CK (R)	0.63291	1.04141	11.45940

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)	0.10461	0.13547	1.07540
	removal	CK (R)	-0.02816	-0.07733	-0.83855
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.10333	0.13540	1.06619
	removal	CK (R)	-0.02816	-0.07733	-0.83855

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)	0.10461	0.13547	1.07540
	removal	CK (R)	-0.02816	-0.07733	-0.83855
sky130_osu_sc_18T_ls__dffs_l	recovery	CK (R)	0.10333	0.13540	1.06619
	removal	CK (R)	-0.02816	-0.07733	-0.83855

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 ()	0.42927	0.98073	13.33370
	min_pulse_width	SN ()	0.43580	0.97858	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	SN ()	0.41748	0.95279	13.33370
	min_pulse_width	SN ()	0.40840	0.95708	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ls__dffs_1	min_pulse_width	CK ()	0.22100	0.59815	13.33370
	min_pulse_width	CK ()	0.55128	0.59815	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.20985	0.59815	13.33370
	min_pulse_width	CK ()	0.53566	0.59815	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 ()	0.75754	0.87326	13.33370
	min_pulse_width	CK ()	0.53450	0.89905	13.33370
sky130_osu_sc_18T_ls__dffs_l	min_pulse_width	CK ()	0.75754	0.87326	13.33370
	min_pulse_width	CK ()	0.53450	0.89905	13.33370

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	0.00931	0.00817	0.00119
	SN	-0.00138	-0.03775	-0.34209
	SN	0.02009	0.01925	0.01218
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00815	0.00726	0.00344
	SN	-0.00138	-0.03075	-0.24302
	SN	0.01893	0.01833	0.01447

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	0.01077	0.01039	0.00877
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00961	0.00926	0.00829

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	0.01077	0.01040	0.00875
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00961	0.00926	0.00827

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	0.00927	0.00814	0.00070
	SN	-0.00138	-0.03785	-0.34352
	SN	0.02006	0.01920	0.01174
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00812	0.00723	0.00313
	SN	-0.00138	-0.03082	-0.24397
	SN	0.01890	0.01828	0.01415

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	-0.00310	-0.00318	-0.00318
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01036	0.01000	0.00954
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00455	0.00424	0.00393
sky130_osu_sc_18T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00310	-0.00318	-0.00318
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01036	0.01000	0.00954
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00455	0.00424	0.00393

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	0.00316	0.00319	0.00318
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01825	0.01804	0.01782
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00865	0.00845	0.00840
sky130_osu_sc_18T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00316	0.00319	0.00318
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01825	0.01804	0.01782
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00865	0.00845	0.00840

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)	-0.00527	-0.00529	-0.00530
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00409	0.00382	0.00356
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)	-0.00527	-0.00529	-0.00530
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00409	0.00382	0.00356

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)	0.00528	0.00533	0.00531
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01023	0.00990	0.00974
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)	0.00528	0.00533	0.00531
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01023	0.00990	0.00974

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)	-0.00064	-0.00111	-0.00145
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00082	-0.00133	-0.00168
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00392	0.00298	0.00236
sky130_osu_sc_18T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00064	-0.00111	-0.00145
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00082	-0.00133	-0.00168
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00392	0.00297	0.00236

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)	0.02866	0.02817	0.02717
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01421	0.01387	0.01367
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02884	0.02801	0.02750
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01544	0.01507	0.01495
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01809	0.01736	0.01708
sky130_osu_sc_18T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02866	0.02817	0.02717
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01421	0.01387	0.01367
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02884	0.02801	0.02750
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01544	0.01507	0.01495
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01809	0.01736	0.01708

SKY130_OSU_SC_18T_LS__DFFx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00535	0.01562	0.67700	0.66623
sky130_osu_sc_18T_ls__dff_l	0.00535	0.01559	0.46052	0.46186

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__dff_1	0.00000	0.00051	0.00054
sky130_osu_sc_18T_ls__dff_l	0.00000	0.00050	0.00053

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)	0.59429	2.17028	14.36220
	QN->Q (FR)	0.10366	1.44835	14.39170
sky130_osu_sc_18T_ls__dff_l	CK->Q (RR)	0.61241	2.36019	14.25660
	QN->Q (FR)	0.12265	1.56139	14.19910

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)	0.96621	2.89755	18.25450
	QN->Q (RF)	0.04214	0.73918	7.92289
sky130_osu_sc_18T_ls__dff_l	CK->Q (RF)	1.00841	3.17586	18.18870
	QN->Q (RF)	0.04888	0.79309	8.03240

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)	0.85849	1.97511	10.36970
sky130_osu_sc_18T_ls__dff_l	CK->QN (RR)	0.87616	2.10473	10.37730

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)	0.45890	1.04769	4.79924
sky130_osu_sc_18T_ls__dff_l	CK->QN (RF)	0.45316	1.07246	4.82256

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)	-0.09574	-0.13939	-0.91731
	setup	CK (R)	0.37444	0.36579	1.41458
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.09823	-0.14127	-0.91767
	setup	CK (R)	0.37276	0.36366	1.41204

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)	-0.50301	-0.99593	-11.41290
	setup	CK (R)	0.58634	1.05623	11.53290
sky130_osu_sc_18T_ls__dff_l	hold	CK (R)	-0.50342	-0.99760	-11.41530
	setup	CK (R)	0.58384	1.05570	11.53380

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 ()	0.19869	0.59815	13.33370
	min_pulse_width	CK ()	0.52227	0.59815	13.33370
sky130_osu_sc_18T_ls__dff_l	min_pulse_width	CK ()	0.19199	0.59815	13.33370
	min_pulse_width	CK ()	0.51558	0.59815	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 ()**	0.64866	0.84317	13.33370
	min_pulse_width	**CK ()**	0.47413	0.90765	13.33370
sky130_osu_sc_18T_ls__dff_l	**min_pulse_width**	**CK ()**	0.64866	0.84317	13.33370
	min_pulse_width	**CK ()**	0.47413	0.90765	13.33370

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	0.00984	0.00891	0.00381
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00878	0.00784	0.00401

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	0.01097	0.01064	0.00924
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00993	0.00958	0.00854

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	0.01097	0.01065	0.00927
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00993	0.00959	0.00856

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	0.00980	0.00888	0.00379
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00875	0.00781	0.00376

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	-0.00305	-0.00315	-0.00314
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00994	0.00964	0.00923
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00305	-0.00315	-0.00314
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00995	0.00965	0.00923

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	0.00312	0.00315	0.00314
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01896	0.01872	0.01848
sky130_osu_sc_18T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00312	0.00315	0.00314
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01897	0.01872	0.01849

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)	-0.00065	-0.00112	-0.00145
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00081	-0.00131	-0.00166
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00065	-0.00112	-0.00145
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00081	-0.00131	-0.00166

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)	0.01417	0.01382	0.01360
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02825	0.02778	0.02687
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02940	0.02856	0.02802
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01538	0.01497	0.01489
sky130_osu_sc_18T_ls__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01417	0.01382	0.01360
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.02826	0.02779	0.02687
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.02940	0.02857	0.02802
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01538	0.01497	0.01489

SKY130_OSU_SC_18T_LS__INVx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00534	0.66581
sky130_osu_sc_18T_ls__inv_10	0.05033	6.26103
sky130_osu_sc_18T_ls__inv_2	0.01026	1.33086
sky130_osu_sc_18T_ls__inv_3	0.01530	1.93193
sky130_osu_sc_18T_ls__inv_4	0.02025	2.60559
sky130_osu_sc_18T_ls__inv_6	0.03037	3.85437
sky130_osu_sc_18T_ls__inv_8	0.04036	4.99298
sky130_osu_sc_18T_ls__inv_l	0.00405	0.46562

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__inv_1	0.00000	0.00006	0.00007
sky130_osu_sc_18T_ls__inv_10	0.00000	0.00057	0.00072
sky130_osu_sc_18T_ls__inv_2	0.00000	0.00011	0.00014
sky130_osu_sc_18T_ls__inv_3	0.00000	0.00017	0.00022
sky130_osu_sc_18T_ls__inv_4	0.00000	0.00023	0.00029
sky130_osu_sc_18T_ls__inv_6	0.00000	0.00034	0.00043
sky130_osu_sc_18T_ls__inv_8	0.00000	0.00045	0.00058
sky130_osu_sc_18T_ls__inv_l	0.00000	0.00005	0.00006

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)**	0.10043	1.39231	13.82090
sky130_osu_sc_18T_ls__inv_10	**A->Y (FR)**	0.12312	0.95170	13.88130
sky130_osu_sc_18T_ls__inv_2	**A->Y (FR)**	0.07649	1.19480	13.83080
sky130_osu_sc_18T_ls__inv_3	**A->Y (FR)**	0.08182	1.11867	13.82980
sky130_osu_sc_18T_ls__inv_4	**A->Y (FR)**	0.08158	1.06209	13.85780
sky130_osu_sc_18T_ls__inv_6	**A->Y (FR)**	0.09022	1.00240	13.85700
sky130_osu_sc_18T_ls__inv_8	**A->Y (FR)**	0.10511	0.96699	13.72320
sky130_osu_sc_18T_ls__inv_l	**A->Y (FR)**	0.11736	1.51318	13.79020

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)**	0.03788	0.68432	7.25856
sky130_osu_sc_18T_ls__inv_10	**A->Y (RF)**	0.05985	0.53509	7.27769
sky130_osu_sc_18T_ls__inv_2	**A->Y (RF)**	0.03214	0.62117	7.26652
sky130_osu_sc_18T_ls__inv_3	**A->Y (RF)**	0.03476	0.59903	7.30065
sky130_osu_sc_18T_ls__inv_4	**A->Y (RF)**	0.03512	0.57710	7.30486
sky130_osu_sc_18T_ls__inv_6	**A->Y (RF)**	0.04322	0.55595	7.30987
sky130_osu_sc_18T_ls__inv_8	**A->Y (RF)**	0.05125	0.54160	7.25989
sky130_osu_sc_18T_ls__inv_l	**A->Y (RF)**	0.04352	0.73502	7.43501

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	0.00506	0.00495	0.00498
sky130_osu_sc_18T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.04431	0.04407	0.04475
sky130_osu_sc_18T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00915	0.00903	0.00915
sky130_osu_sc_18T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01401	0.01384	0.01400
sky130_osu_sc_18T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01810	0.01785	0.01815
sky130_osu_sc_18T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02692	0.02669	0.02713
sky130_osu_sc_18T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.03568	0.03551	0.03600
sky130_osu_sc_18T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00385	0.00376	0.00376

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	-0.00088	-0.00094	-0.00097
sky130_osu_sc_18T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01612	-0.01543	-0.01442
sky130_osu_sc_18T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00291	-0.00300	-0.00296
sky130_osu_sc_18T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00384	-0.00394	-0.00383
sky130_osu_sc_18T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00600	-0.00601	-0.00582
sky130_osu_sc_18T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00913	-0.00915	-0.00869
sky130_osu_sc_18T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01249	-0.01228	-0.01161
sky130_osu_sc_18T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00061	-0.00066	-0.00069

SKY130_OSU_SC_18T_LS__MUX2

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.45339	0.45715	0.01085	0.62085

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__mux2_1	0.00000	0.00019	0.00022

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)	-	0.05499	0.85342	9.04094
	A1->Y (RR)	-	0.06004	0.85972	9.04879
	S0->Y (RR)	(!A0 * A1)	0.11746	0.99696	8.61897
	S0->Y (FR)	(A0 * !A1)	0.12802	1.20309	10.41880

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)	-	0.03668	0.66296	7.05386
	A1->Y (FF)	-	0.03293	0.65697	7.03015
	S0->Y (FF)	(!A0 * A1)	0.22490	0.95862	7.65507
	S0->Y (RF)	(A0 * !A1)	0.04398	0.68494	6.84782

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	-	-0.00529	-0.00530	-0.00530
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00378	-0.00378	-0.00379
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00623	0.00589	0.00580
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00334	-0.00382	-0.00407

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	-	0.00529	0.00530	0.00530
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00378	0.00378	0.00379
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00127	0.00080	0.00058
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01334	0.01299	0.01291

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)	-0.00147	-0.00147	-0.00147

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)	0.00147	0.00147	0.00147

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)	-0.00176	-0.00176	-0.00176

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)	0.00176	0.00176	0.00176

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)	-0.00105	-0.00155	-0.00176
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00103	-0.00153	-0.00175

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)	0.01008	0.00972	0.00964
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00949	0.00917	0.00908

SKY130_OSU_SC_18T_LS__NAND2x

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00536	0.00529	0.66439
sky130_osu_sc_18T_ls__nand2_l	0.00406	0.00402	0.46253

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nand2_1	0.00000	0.00007	0.00014
sky130_osu_sc_18T_ls__nand2_l	0.00000	0.00007	0.00012

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)	0.10668	1.40132	13.87120
	B->Y (FR)	0.12591	1.41512	13.80700
sky130_osu_sc_18T_ls__nand2_l	A->Y (FR)	0.12255	1.52108	13.78640
	B->Y (FR)	0.14335	1.53933	13.77370

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)	0.05722	0.82363	8.45382
	B->Y (RF)	0.06397	0.81751	8.24078
sky130_osu_sc_18T_ls__nand2_l	A->Y (RF)	0.06854	0.92066	8.75082
	B->Y (RF)	0.07526	0.91598	8.54066

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	0.00540	0.00528	0.00529
	B	0.00000	0.00000	0.00000
	B	0.00658	0.00644	0.00646
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00406	0.00397	0.00397
	B	0.00000	0.00000	0.00000
	B	0.00491	0.00480	0.00480

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	-0.00046	-0.00054	-0.00056
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00052	-0.00053
sky130_osu_sc_18T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00041	-0.00044
	B	0.00000	0.00000	0.00000
	B	-0.00034	-0.00039	-0.00041

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)	-0.00355	-0.00358	-0.00359
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00255	-0.00257	-0.00258

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)	0.00359	0.00367	0.00361
sky130_osu_sc_18T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00258	0.00263	0.00259

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)	-0.00332	-0.00336	-0.00334
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00238	-0.00240	-0.00239

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)	0.00332	0.00340	0.00335
sky130_osu_sc_18T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00238	0.00244	0.00240

SKY130_OSU_SC_18T_LS__NOR2x

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00526	0.00566	0.30128
sky130_osu_sc_18T_ls__nor2_l	0.00393	0.00432	0.21152

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__nor2_1	0.00000	0.00007	0.00008
sky130_osu_sc_18T_ls__nor2_l	0.00000	0.00006	0.00008

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)	0.25913	1.87003	14.18260
	B->Y (FR)	0.21742	1.78228	13.91620
sky130_osu_sc_18T_ls__nor2_l	A->Y (FR)	0.29268	2.04311	14.12450
	B->Y (FR)	0.25878	1.96231	13.87950

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)	0.04435	0.59719	5.57338
	B->Y (RF)	0.03933	0.58775	5.55169
sky130_osu_sc_18T_ls__nor2_l	A->Y (RF)	0.04991	0.63922	5.75859
	B->Y (RF)	0.04510	0.63132	5.73941

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	0.00668	0.00657	0.00655
	B	0.00000	0.00000	0.00000
	B	0.00551	0.00533	0.00527
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00487	0.00478	0.00476
	B	0.00000	0.00000	0.00000
	B	0.00414	0.00396	0.00395

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	0.00031	0.00011	-0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00078	-0.00080	-0.00092
sky130_osu_sc_18T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00020	0.00006	-0.00002
	B	0.00000	0.00000	0.00000
	B	-0.00050	-0.00052	-0.00062

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)	-0.00307	-0.00317	-0.00315
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00214	-0.00220	-0.00220

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)	0.00314	0.00318	0.00315
sky130_osu_sc_18T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00219	0.00222	0.00220

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)	-0.00191	-0.00195	-0.00192
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00133	-0.00135	-0.00134

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)	0.00194	0.00196	0.00193
sky130_osu_sc_18T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00135	0.00137	0.00135

SKY130_OSU_SC_18T_LS__OAI21

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00537	0.00533	0.00452	0.29641

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai21_l	0.00000	0.00008	0.00013

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)	0.29906	1.86285	13.91380
	A1->Y (FR)	0.35115	1.95847	14.18080
	B0->Y (FR)	0.15110	1.32330	11.18330

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)	0.07732	0.70436	6.20290
	A1->Y (RF)	0.08446	0.70522	6.18696
	B0->Y (RF)	0.06297	0.71239	6.49280

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	0.00718	0.00697	0.00692
	A1	0.00000	0.00000	0.00000
	A1	0.00839	0.00824	0.00820
	B0	0.00573	0.00552	0.00528

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	0.00032	0.00029	0.00018
	A1	0.00000	0.00000	0.00000
	A1	0.00142	0.00123	0.00113
	B0	0.00211	0.00203	0.00193

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)	-0.00192	-0.00194	-0.00192
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00308	-0.00317	-0.00316
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00327	-0.00328	-0.00327

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)	0.00194	0.00196	0.00193
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00314	0.00317	0.00316
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00327	0.00329	0.00328

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)	-0.00302	-0.00312	-0.00310
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00307	-0.00317	-0.00315
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00323	-0.00325	-0.00324

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)	0.00308	0.00312	0.00310
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00313	0.00317	0.00315
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00323	0.00326	0.00325

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)	-0.00259	-0.00262	-0.00266

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)	0.00266	0.00272	0.00267

SKY130_OSU_SC_18T_LS__OAI22

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00511	0.00547	0.00566	0.00544	0.29780

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__oai22_1	0.00000	0.00012	0.00014

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)	0.38936	2.00069	14.23900
	A1->Y (FR)	0.34576	1.90918	13.97540
	B0->Y (FR)	0.24210	1.77403	13.86580
	B1->Y (FR)	0.28896	1.89184	14.13580

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)	0.11136	0.75195	6.29294
	A1->Y (RF)	0.09452	0.72881	6.24964
	B0->Y (RF)	0.07946	0.73481	6.53723
	B1->Y (RF)	0.09818	0.76274	6.66469

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	0.01058	0.01045	0.01041
	A1	0.00935	0.00914	0.00908
	B0	0.00713	0.00680	0.00686
	B1	0.00841	0.00824	0.00820

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ls__oai22_l	A0	0.00204	0.00185	0.00171
	A1	0.00099	0.00095	0.00080
	B0	0.00100	0.00095	0.00079
	B1	0.00207	0.00188	0.00171

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)	-0.00307	-0.00317	-0.00315
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00307	-0.00317	-0.00315
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00307	-0.00317	-0.00315
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00324	-0.00326	-0.00325

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)	0.00313	0.00317	0.00315
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00313	0.00317	0.00315
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00313	0.00318	0.00315
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00325	0.00332	0.00326

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)	-0.00190	-0.00194	-0.00191
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00190	-0.00194	-0.00191
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00305	-0.00314	-0.00313
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00323	-0.00324	-0.00324

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)	0.00193	0.00195	0.00192
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00193	0.00195	0.00192
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00311	0.00314	0.00313
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00323	0.00325	0.00325

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)	-0.00189	-0.00193	-0.00190
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00189	-0.00193	-0.00190
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00338	-0.00347	-0.00346
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00347	-0.00351	-0.00356

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)	0.00192	0.00194	0.00191
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00192	0.00194	0.00191
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00346	0.00347	0.00346
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00356	0.00357	0.00358

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)	-0.00303	-0.00313	-0.00311
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00303	-0.00313	-0.00311
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00344	-0.00355	-0.00353
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00352	-0.00355	-0.00361

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)	0.00308	0.00313	0.00311
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00308	0.00313	0.00311
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00351	0.00356	0.00353
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00361	0.00365	0.00363

SKY130_OSU_SC_18T_LS__OR2x

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00558	0.00547	0.66513
sky130_osu_sc_18T_ls__or2_2	0.00558	0.00547	1.32544
sky130_osu_sc_18T_ls__or2_4	0.00558	0.00547	2.58146
sky130_osu_sc_18T_ls__or2_8	0.00556	0.00547	5.00825
sky130_osu_sc_18T_ls__or2_l	0.00431	0.00414	0.46455

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__or2_1	0.00000	0.00012	0.00016
sky130_osu_sc_18T_ls__or2_2	0.00000	0.00017	0.00023
sky130_osu_sc_18T_ls__or2_4	0.00000	0.00027	0.00037
sky130_osu_sc_18T_ls__or2_8	0.00000	0.00046	0.00066
sky130_osu_sc_18T_ls__or2_l	0.00000	0.00011	0.00014

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)	0.16542	1.28238	9.60433
	B->Y (RR)	0.15773	1.26103	9.45896
sky130_osu_sc_18T_ls__or2_2	A->Y (RR)	0.17142	1.14196	9.88424
	B->Y (RR)	0.16245	1.12410	9.77776
sky130_osu_sc_18T_ls__or2_4	A->Y (RR)	0.22378	1.10088	10.33760
	B->Y (RR)	0.21446	1.08711	10.26840
sky130_osu_sc_18T_ls__or2_8	A->Y (RR)	0.32705	1.14504	10.96760
	B->Y (RR)	0.31722	1.13456	10.91750
sky130_osu_sc_18T_ls__or2_l	A->Y (RR)	0.19073	1.43325	9.82136
	B->Y (RR)	0.18325	1.41355	9.68611

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)	0.47144	1.26494	8.41061
	B->Y (FF)	0.41231	1.16902	7.98956
sky130_osu_sc_18T_ls__or2_2	A->Y (FF)	0.61393	1.40280	8.79144
	B->Y (FF)	0.55534	1.29916	8.45588
sky130_osu_sc_18T_ls__or2_4	A->Y (FF)	0.91995	1.73310	9.41417
	B->Y (FF)	0.86130	1.63119	9.17402
sky130_osu_sc_18T_ls__or2_8	A->Y (FF)	1.52497	2.40178	10.34350
	B->Y (FF)	1.46633	2.30091	10.14950
sky130_osu_sc_18T_ls__or2_l	A->Y (FF)	0.51394	1.33866	8.45666
	B->Y (FF)	0.45470	1.24410	8.05853

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	0.00520	0.00481	0.00452
	B	0.00000	0.00000	0.00000
	B	0.00414	0.00378	0.00353
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00925	0.00907	0.00873
	B	0.00000	0.00000	0.00000
	B	0.00812	0.00808	0.00782
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01796	0.01818	0.01803
	B	0.00000	0.00000	0.00000
	B	0.01683	0.01729	0.01720
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03520	0.03601	0.03666
	B	0.00000	0.00000	0.00000
	B	0.03404	0.03499	0.03615
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00383	0.00355	0.00330
	B	0.00000	0.00000	0.00000
	B	0.00315	0.00289	0.00268

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	0.01125	0.01122	0.01117
	B	0.00000	0.00000	0.00000
	B	0.00981	0.00982	0.00970
sky130_osu_sc_18T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01388	0.01437	0.01433
	B	0.00000	0.00000	0.00000
	B	0.01246	0.01291	0.01287
sky130_osu_sc_18T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02032	0.02158	0.02194
	B	0.00000	0.00000	0.00000
	B	0.01888	0.02011	0.02042
sky130_osu_sc_18T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03311	0.03533	0.03715
	B	0.00000	0.00000	0.00000
	B	0.03161	0.03388	0.03549
sky130_osu_sc_18T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00852	0.00845	0.00837
	B	0.00000	0.00000	0.00000
	B	0.00749	0.00745	0.00737

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)	-0.00309	-0.00318	-0.00317
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00309	-0.00318	-0.00316
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00309	-0.00318	-0.00317
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00309	-0.00318	-0.00317
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00216	-0.00222	-0.00221

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)	0.00314	0.00318	0.00317
sky130_osu_sc_18T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00314	0.00318	0.00316
sky130_osu_sc_18T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00314	0.00318	0.00317
sky130_osu_sc_18T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00314	0.00318	0.00317
sky130_osu_sc_18T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00219	0.00223	0.00221

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)	-0.00192	-0.00194	-0.00192
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00192	-0.00194	-0.00192
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00192	-0.00194	-0.00192
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00192	-0.00194	-0.00192
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00136	-0.00137	-0.00136

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)	0.00195	0.00197	0.00193
sky130_osu_sc_18T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00195	0.00197	0.00193
sky130_osu_sc_18T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00195	0.00197	0.00193
sky130_osu_sc_18T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00195	0.00197	0.00194
sky130_osu_sc_18T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00138	0.00139	0.00137

SKY130_OSU_SC_18T_LS__TBUFIx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00566	0.00710	0.30135
sky130_osu_sc_18T_ls__tbufi_l	0.00434	0.00546	0.21123

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tbufi_1	0.00000	0.00009	0.00014
sky130_osu_sc_18T_ls__tbufi_l	0.00000	0.00008	0.00012

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)	0.20676	1.74553	13.90560
	OE->Y (FR)	0.15603	0.68615	5.39877
	OE->Y (RR)	0.27770	1.67838	9.80613
sky130_osu_sc_18T_ls__tbufi_l	A->Y (FR)	0.24791	1.92664	13.86760
	OE->Y (FR)	0.16734	0.69054	5.37657
	OE->Y (RR)	0.31376	1.87880	10.02710

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)	0.05427	0.68073	6.26894
	OE->Y (FF)	0.15778	0.68711	5.40244
	OE->Y (RF)	0.05347	0.66358	6.09982
sky130_osu_sc_18T_ls__tbufi_l	A->Y (RF)	0.06613	0.74609	6.52465
	OE->Y (FF)	0.16910	0.69440	5.37998
	OE->Y (RF)	0.06569	0.73087	6.33325

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	0.00513	0.00485	0.00489
	OE	0.00000	0.00000	0.00000
	OE	0.00484	0.00438	0.00415
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00387	0.00371	0.00365
	OE	0.00000	0.00000	0.00000
	OE	0.00350	0.00315	0.00299

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	-0.00078	-0.00081	-0.00092
	OE	0.00000	0.00000	0.00000
	OE	0.00375	0.00327	0.00306
sky130_osu_sc_18T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00050	-0.00052	-0.00062
	OE	0.00000	0.00000	0.00000
	OE	0.00262	0.00227	0.00211

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)	-0.00276	-0.00280	-0.00277
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00261	-0.00266	-0.00262
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00205	-0.00207	-0.00205
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00194	-0.00196	-0.00194

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)	0.00276	0.00280	0.00277
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00265	0.00268	0.00266
sky130_osu_sc_18T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00205	0.00207	0.00205
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00197	0.00198	0.00196

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)	0.00210	0.00163	0.00140
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00187	0.00138	0.00118
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00145	0.00108	0.00094
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00128	0.00092	0.00077

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)	0.00575	0.00536	0.00523
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00598	0.00558	0.00542
sky130_osu_sc_18T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00450	0.00416	0.00407
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00467	0.00433	0.00420

SKY130_OSU_SC_18T_LS__TNBUFIx

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.00565	0.00880	0.30151
sky130_osu_sc_18T_ls__tnbufi_l	0.00433	0.00650	0.21126

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__tnbufi_1	0.00000	0.00010	0.00011
sky130_osu_sc_18T_ls__tnbufi_l	0.00000	0.00009	0.00010

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)	0.20839	1.74568	13.90840
	OE->Y (RR)	0.04407	0.36135	4.28500
	OE->Y (FR)	0.23562	1.85039	14.15890
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (FR)	0.24974	1.92584	13.86800
	OE->Y (RR)	0.04736	0.36323	4.28523
	OE->Y (FR)	0.26645	2.02152	14.09670

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)	0.05340	0.68015	6.26991
	OE->Y (RF)	0.04365	0.36106	4.28503
	OE->Y (FF)	0.16020	0.91033	6.78871
sky130_osu_sc_18T_ls__tnbufi_l	A->Y (RF)	0.06489	0.74540	6.52448
	OE->Y (RF)	0.04724	0.36341	4.28525
	OE->Y (FF)	0.18369	0.97946	6.90351

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	0.00526	0.00498	0.00500
	OE	0.00000	0.00000	0.00000
	OE	0.01226	0.01201	0.01198
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00400	0.00383	0.00378
	OE	0.00000	0.00000	0.00000
	OE	0.00908	0.00886	0.00883

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	-0.00093	-0.00096	-0.00106
	OE	0.00000	0.00000	0.00000
	OE	0.01132	0.01105	0.01097
sky130_osu_sc_18T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00065	-0.00067	-0.00076
	OE	0.00000	0.00000	0.00000
	OE	0.00832	0.00808	0.00805

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)	-0.00242	-0.00245	-0.00243
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00228	-0.00233	-0.00229
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00172	-0.00174	-0.00172
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00162	-0.00164	-0.00162

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)	0.00242	0.00245	0.00243
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00232	0.00234	0.00232
sky130_osu_sc_18T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00172	0.00174	0.00172
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00164	0.00166	0.00164

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)	-0.00382	-0.00445	-0.00466
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00362	-0.00432	-0.00459
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00260	-0.00305	-0.00322
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00247	-0.00296	-0.00317

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)	0.00952	0.00923	0.00918
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00932	0.00909	0.00902
sky130_osu_sc_18T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00705	0.00681	0.00674
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00691	0.00668	0.00663

SKY130_OSU_SC_18T_LS__XNOR2

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.01114	0.01008	0.30148

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xnor2_l	0.00000	0.00023	0.00026

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	0.36150	1.77607	10.02110
	A->Y (FR)	!B	0.28442	1.85673	13.98570
	B->Y (RR)	A	0.30137	1.71343	9.89605
	B->Y (FR)	!A	0.33430	1.94409	14.23100

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	0.25998	1.02545	7.28004
	A->Y (RF)	!B	0.08113	0.69610	6.19574
	B->Y (FF)	A	0.25198	1.01588	7.26911
	B->Y (RF)	!A	0.08810	0.70446	6.21100

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	0.00448	0.00394	0.00377
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01252	0.01197	0.01185
	B	A	0.00000	0.00000	0.00000
	B	A	0.00217	0.00171	0.00137
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01328	0.01283	0.01274

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	0.01482	0.01435	0.01402
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00358	0.00311	0.00276
	B	A	0.00000	0.00000	0.00000
	B	A	0.01406	0.01387	0.01371
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00397	0.00337	0.00299

SKY130_OSU_SC_18T_LS__XOR2

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.01108	0.01013	0.29704

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ls__xor2_l	0.00000	0.00023	0.00025

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	0.37567	1.76689	9.87781
	A->Y (FR)	B	0.29868	1.89509	14.10680
	B->Y (RR)	!A	0.30772	1.70981	9.82464
	B->Y (FR)	A	0.33077	1.93680	14.14650

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	0.25560	1.01160	7.21546
	A->Y (RF)	B	0.06888	0.69704	6.26695
	B->Y (FF)	!A	0.24332	1.00013	7.19023
	B->Y (RF)	A	0.07962	0.68989	6.10409

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	0.01416	0.01368	0.01358
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00283	0.00193	0.00153
	B	A	0.00000	0.00000	0.00000
	B	A	0.01446	0.01406	0.01397
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00188	0.00139	0.00106

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	0.00268	0.00203	0.00161
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01573	0.01549	0.01539
	B	A	0.00000	0.00000	0.00000
	B	A	0.00269	0.00204	0.00169
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01436	0.01425	0.01414

SKY130_OSU_SC_18T_LS_x

sky130_osu_sc_18T_ls_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44,
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	0.08385
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	53376.50000	106753.00000
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
	-0.00345	0.00434	0.08506

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
	0.93112	0.86763	0.13182