sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_LS__ADDFx
SKY130_OSU_SC_12T_LS__ADDHx
SKY130_OSU_SC_12T_LS__AND2x
SKY130_OSU_SC_12T_LS__AOI21
SKY130_OSU_SC_12T_LS__AOI22
SKY130_OSU_SC_12T_LS__BUFx
SKY130_OSU_SC_12T_LS__DFFRx
SKY130_OSU_SC_12T_LS__DFFSRx
SKY130_OSU_SC_12T_LS__DFFSx
SKY130_OSU_SC_12T_LS__DFFx
SKY130_OSU_SC_12T_LS__INVx
SKY130_OSU_SC_12T_LS__MUX2
SKY130_OSU_SC_12T_LS__NAND2x
SKY130_OSU_SC_12T_LS__NOR2x
SKY130_OSU_SC_12T_LS__OAI21
SKY130_OSU_SC_12T_LS__OAI22
SKY130_OSU_SC_12T_LS__OR2x
SKY130_OSU_SC_12T_LS__TBUFIx
SKY130_OSU_SC_12T_LS__TNBUFIx
SKY130_OSU_SC_12T_LS__XNOR2
SKY130_OSU_SC_12T_LS__XOR2
SKY130_OSU_SC_12T_LS_x

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__addf_1	31.25760
sky130_osu_sc_12T_ls__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_ls__addf_1	0.01081	0.01086	0.00846	1.27086	0.57610	1.11798
sky130_osu_sc_12T_ls__addf_l	0.01083	0.01086	0.00847	0.81148	0.57835	1.11799

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.01452	0.01836
sky130_osu_sc_12T_ls__addf_l	0.00000	0.01189	0.01834

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.10801	1.32958	20.07030
	B->CO (RR)	0.10165	1.27105	19.28260
	CI->CO (RR)	0.10172	1.34587	20.48290
	CON->CO (FR)	0.02440	0.74040	11.99320
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.11211	1.25636	16.16390
	B->CO (RR)	0.10571	1.21390	15.84240
	CI->CO (RR)	0.10582	1.27449	16.66440
	CON->CO (FR)	0.03070	0.81746	11.85100

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.19369	1.95157	28.90310
	B->CO (FF)	0.17070	1.85257	27.66660
	CI->CO (FF)	0.16974	1.93436	29.12630
	CON->CO (RF)	0.01515	0.41632	6.70919
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.18856	1.67500	21.23670
	B->CO (FF)	0.16612	1.59461	20.45320
	CI->CO (FF)	0.16459	1.65764	21.48180
	CON->CO (RF)	0.01652	0.41713	5.96238

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.17089	1.02249	11.64530
	B->CON (FR)	0.14636	0.95787	11.21890
	CI->CON (FR)	0.14691	1.00571	11.90910
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.16241	1.01541	11.66550
	B->CON (FR)	0.13865	0.95173	11.23760
	CI->CON (FR)	0.13839	0.99908	11.92920

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.05904	0.41412	4.74506
	B->CON (RF)	0.05501	0.40990	4.71296
	CI->CON (RF)	0.05268	0.43340	5.10491
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.05726	0.41297	4.75570
	B->CON (RF)	0.05334	0.40859	4.72362
	CI->CON (RF)	0.05091	0.43200	5.11627

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.28028	1.86693	23.54860
	B->S (-R)	0.27114	1.82811	22.81370
	CI->S (-R)	0.25492	1.84679	23.77310
	CON->S (RR)	0.06732	0.59689	6.49374
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.27027	1.85958	23.53950
	B->S (-R)	0.26160	1.82093	22.80740
	CI->S (-R)	0.24491	1.83965	23.76520
	CON->S (RR)	0.06735	0.59672	6.49379

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addf_1	A->S (-F)	0.18772	1.08410	12.56450
	B->S (-F)	0.19973	1.06094	12.27000
	CI->S (-F)	0.18125	1.09730	12.99220
	CON->S (FF)	0.08747	0.57036	5.87294
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.18345	1.07942	12.56160
	B->S (-F)	0.19595	1.05961	12.26730
	CI->S (-F)	0.17698	1.09443	12.98940
	CON->S (FF)	0.08745	0.57178	5.87266

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00229	0.00237	0.00500
	B	0.00322	0.00324	0.00526
	CI	0.00329	0.00345	0.00609
sky130_osu_sc_12T_ls__addf_l	A	0.00243	0.00233	0.00371
	B	0.00297	0.00295	0.00446
	CI	0.00304	0.00316	0.00517

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00821	0.00860	0.01771
	B	0.00851	0.00883	0.01658
	CI	0.00700	0.00740	0.01668
sky130_osu_sc_12T_ls__addf_l	A	0.00801	0.00825	0.01363
	B	0.00830	0.00851	0.01308
	CI	0.00680	0.00707	0.01271

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00820	0.00839	0.01222
	B	0.00851	0.00870	0.01178
	CI	0.00700	0.00719	0.01133
sky130_osu_sc_12T_ls__addf_l	A	0.00801	0.00818	0.01190
	B	0.00830	0.00847	0.01148
	CI	0.00680	0.00696	0.01101

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00266	0.00254	0.00372
	B	0.00319	0.00313	0.00452
	CI	0.00328	0.00339	0.00515
sky130_osu_sc_12T_ls__addf_l	A	0.00242	0.00230	0.00345
	B	0.00295	0.00289	0.00427
	CI	0.00304	0.00314	0.00488

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00821	0.00855	0.01643
	B	0.00851	0.00882	0.01554
	CI	0.00700	0.00736	0.01541
sky130_osu_sc_12T_ls__addf_l	A	0.00801	0.00832	0.01596
	B	0.00831	0.00859	0.01510
	CI	0.00680	0.00712	0.01491

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01788	0.01782	0.02248
	B	0.01630	0.01568	0.02313
	CI	0.01468	0.01441	0.01912
sky130_osu_sc_12T_ls__addf_l	A	0.01788	0.01782	0.02248
	B	0.01628	0.01568	0.02313
	CI	0.01467	0.01441	0.01912

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addh_1	18.55920
sky130_osu_sc_12T_ls__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ls__addh_1	0.00530	0.00561	1.22297	1.25765	1.28324
sky130_osu_sc_12T_ls__addh_l	0.00530	0.00561	0.80696	1.25835	0.83177

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.01601	0.01796
sky130_osu_sc_12T_ls__addh_l	0.00000	0.01074	0.01268

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (RR)	0.07508	0.57364	6.18501
	B->CO (RR)	0.07763	0.57882	6.26481
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.07818	0.64318	6.11993
	B->CO (RR)	0.08077	0.64906	6.19247

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CO (FF)	0.07443	0.55994	6.18360
	B->CO (FF)	0.07918	0.57267	6.22789
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.07310	0.55864	5.66514
	B->CO (FF)	0.07771	0.57156	5.70989

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (RR)	0.11262	0.59378	6.14757
	B->CON (RR)	0.11514	0.59831	6.22763
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.10457	0.58067	6.11883
	B->CON (RR)	0.10711	0.58547	6.19071

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->CON (FF)	0.09741	0.57608	6.24872
	B->CON (FF)	0.09748	0.58465	6.28887
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.09084	0.56035	6.13941
	B->CON (FF)	0.09090	0.56942	6.18969

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (FR)	0.13928	1.24697	16.65370
	B->S (FR)	0.13975	1.25632	16.73190
	CON->S (FR)	0.02617	0.75393	12.23540
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.13704	1.20915	13.98450
	B->S (FR)	0.13746	1.21863	14.01490
	CON->S (FR)	0.03158	0.82749	12.06990

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__addh_1	A->S (RF)	0.13628	1.05241	13.31800
	B->S (RF)	0.13882	1.05537	13.39700
	CON->S (RF)	0.01475	0.41854	6.78713
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.13027	0.90936	9.25978
	B->S (RF)	0.13285	0.91276	9.33221
	CON->S (RF)	0.01609	0.42172	6.10146

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00427	0.00411	0.00723
	B	0.00000	0.00000	0.00000
	B	0.00393	0.00371	0.00674
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00381	0.00360	0.00723
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00321	0.00658

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00591	0.00570	0.00883
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00633	0.00935
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00544	0.00525	0.00861
	B	0.00000	0.00000	0.00000
	B	0.00578	0.00582	0.00911

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00428	0.00411	0.00726
	B	0.00000	0.00000	0.00000
	B	0.00393	0.00376	0.00673
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00381	0.00361	0.00701
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00321	0.00642

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00591	0.00570	0.00854
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00633	0.00923
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00544	0.00522	0.00824
	B	0.00000	0.00000	0.00000
	B	0.00578	0.00582	0.00876

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00592	0.00571	0.00806
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00633	0.00957
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00545	0.00525	0.00870
	B	0.00000	0.00000	0.00000
	B	0.00578	0.00582	0.00915

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	A	0.00000	0.00000	0.00000
	A	0.00427	0.00411	0.00718
	B	0.00000	0.00000	0.00000
	B	0.00394	0.00373	0.00666
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00381	0.00361	0.00684
	B	0.00000	0.00000	0.00000
	B	0.00347	0.00323	0.00635

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.31057	1.25457	0.34239
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.31062	1.25463	0.34245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.31043	1.25437	0.35258
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.31048	1.25443	0.35263

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__and2_1	8.30280
sky130_osu_sc_12T_ls__and2_2	10.25640
sky130_osu_sc_12T_ls__and2_4	14.16360
sky130_osu_sc_12T_ls__and2_6	18.07080
sky130_osu_sc_12T_ls__and2_8	21.97800
sky130_osu_sc_12T_ls__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__and2_1	0.00285	0.00296	1.23226
sky130_osu_sc_12T_ls__and2_2	0.00285	0.00296	2.45408
sky130_osu_sc_12T_ls__and2_4	0.00285	0.00296	4.76527
sky130_osu_sc_12T_ls__and2_6	0.00289	0.00296	7.01057
sky130_osu_sc_12T_ls__and2_8	0.00285	0.00296	9.10736
sky130_osu_sc_12T_ls__and2_l	0.00221	0.00228	0.81285

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00744	0.01185
sky130_osu_sc_12T_ls__and2_2	0.00000	0.01187	0.01197
sky130_osu_sc_12T_ls__and2_4	0.00000	0.02073	0.02361
sky130_osu_sc_12T_ls__and2_6	0.00000	0.02959	0.03534
sky130_osu_sc_12T_ls__and2_8	0.00000	0.03844	0.04707
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00086	0.00133

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (RR)	0.05765	0.52207	6.02371
	B->Y (RR)	0.06141	0.53170	6.01730
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.06370	0.45082	6.08947
	B->Y (RR)	0.06743	0.45762	6.09005
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.08653	0.44109	6.34133
	B->Y (RR)	0.09020	0.44364	6.35052
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.10929	0.45884	6.50445
	B->Y (RR)	0.11285	0.45790	6.51369
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.13129	0.48376	6.63399
	B->Y (RR)	0.13508	0.48058	6.64181
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.06447	0.59343	5.87920
	B->Y (RR)	0.06810	0.60079	5.84664

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__and2_1	A->Y (FF)	0.05885	0.50248	5.71485
	B->Y (FF)	0.06143	0.51306	5.75203
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.06927	0.49221	5.88756
	B->Y (FF)	0.07101	0.49763	5.92679
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.09765	0.52270	6.18699
	B->Y (FF)	0.09709	0.52292	6.21108
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.12780	0.55939	6.38775
	B->Y (FF)	0.12475	0.55510	6.40186
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.15587	0.59230	6.50648
	B->Y (FF)	0.15079	0.58569	6.50527
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.06166	0.51281	5.34004
	B->Y (FF)	0.06798	0.52966	5.39558

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00285	0.00265	0.01480
	B	0.00000	0.00000	0.00000
	B	0.00289	0.00245	0.00995
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00537	0.00535	0.01731
	B	0.00000	0.00000	0.00000
	B	0.00542	0.00519	0.01282
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01106	0.01145	0.02255
	B	0.00000	0.00000	0.00000
	B	0.01110	0.01129	0.01865
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01684	0.01750	0.02794
	B	0.00000	0.00000	0.00000
	B	0.01690	0.01744	0.02443
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02259	0.02333	0.03333
	B	0.00000	0.00000	0.00000
	B	0.02265	0.02337	0.03039
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00222	0.00227	0.01363
	B	0.00000	0.00000	0.00000
	B	0.00226	0.00203	0.00980

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	A	0.00000	0.00000	0.00000
	A	0.00737	0.00751	0.01677
	B	0.00000	0.00000	0.00000
	B	0.00840	0.00849	0.01691
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00942	0.00987	0.01901
	B	0.00000	0.00000	0.00000
	B	0.01049	0.01079	0.01931
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01459	0.01547	0.02461
	B	0.00000	0.00000	0.00000
	B	0.01556	0.01632	0.02466
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01994	0.02123	0.03023
	B	0.00000	0.00000	0.00000
	B	0.02089	0.02217	0.03012
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02544	0.02667	0.03578
	B	0.00000	0.00000	0.00000
	B	0.02635	0.02764	0.03537
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00568	0.00585	0.01538
	B	0.00000	0.00000	0.00000
	B	0.00645	0.00663	0.01553

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00252	-0.00255	-0.00254
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00252	-0.00255	-0.00254
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00252	-0.00255	-0.00254
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00255	-0.00257	-0.00257
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00252	-0.00255	-0.00254
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00179	-0.00181	-0.00181

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00254	0.00257	0.00255
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00254	0.00257	0.00255
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00254	0.00257	0.00255
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00257	0.00259	0.00258
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00254	0.00256	0.00255
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00181	0.00183	0.00182

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00238
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00238
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00238
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00238	-0.00239	-0.00238
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00237	-0.00239	-0.00238
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00170	-0.00171	-0.00170

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00241	0.00240	0.00239
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00241	0.00241	0.00239
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00241	0.00241	0.00239
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00241	0.00241	0.00239
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00241	0.00240	0.00239
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00172	0.00172	0.00171

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__aoi21_l	0.00259	0.00278	0.00276	0.54411

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00306	0.00587

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (FR)	0.08566	0.95039	11.50870
	A1->Y (FR)	0.06666	0.86079	10.76650
	B0->Y (FR)	0.06651	0.94321	11.89180

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi21_l	A0->Y (RF)	0.02945	0.37156	4.46836
	A1->Y (RF)	0.02636	0.37187	4.50102
	B0->Y (RF)	0.01973	0.36510	4.52951

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00619	0.00608	0.00662
	A1	0.00000	0.00000	0.00000
	A1	0.00514	0.00499	0.00555
	B0	0.00382	0.00381	0.00543

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00107	0.00088	0.00177
	A1	0.00000	0.00000	0.00000
	A1	0.00111	0.00095	0.00223
	B0	-0.00050	-0.00050	0.00092

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00192	-0.00204	-0.00203
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00206	-0.00208	-0.00206
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00206	-0.00207	-0.00207

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00201	0.00205	0.00203
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00206	0.00208	0.00207
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00210	0.00208	0.00207

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00193	-0.00204	-0.00203
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00207	-0.00207	-0.00207
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00230	-0.00231	-0.00232

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00202	0.00204	0.00203
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00207	0.00209	0.00207
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00231	0.00234	0.00232

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00095	-0.00096	-0.00095

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00104	0.00104	0.00097

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_l	0.00259	0.00277	0.00291	0.00272	0.53381

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00388	0.01173

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (FR)	0.11056	0.97568	11.45030
	A1->Y (FR)	0.09760	0.95631	11.38130
	B0->Y (FR)	0.07053	0.93997	11.75920
	B1->Y (FR)	0.08394	0.95962	11.84140

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__aoi22_l	A0->Y (RF)	0.03779	0.37988	4.42339
	A1->Y (RF)	0.03467	0.38048	4.45422
	B0->Y (RF)	0.02146	0.36159	4.43280
	B1->Y (RF)	0.02491	0.36180	4.40311

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00746	0.00735	0.00788
	A1	0.00641	0.00626	0.00674
	B0	0.00415	0.00402	0.00570
	B1	0.00640	0.00629	0.00774

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00226	0.00206	0.00296
	A1	0.00229	0.00211	0.00341
	B0	-0.00027	-0.00028	0.00105
	B1	-0.00023	-0.00030	0.00062

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00193	-0.00204	-0.00202
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00206	-0.00207	-0.00206
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00206	-0.00207	-0.00206
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00206	-0.00207	-0.00206

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00201	0.00204	0.00202
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00206	0.00208	0.00207
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00210	0.00208	0.00207
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00210	0.00208	0.00207

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00195	-0.00204	-0.00203
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00206	-0.00207	-0.00207
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00228	-0.00230	-0.00231
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00229	-0.00230	-0.00231

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00202	0.00204	0.00203
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00206	0.00209	0.00208
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00230	0.00233	0.00231
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00230	0.00233	0.00231

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00094	-0.00096	-0.00095
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00094	-0.00095	-0.00094
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00240	-0.00242	-0.00242
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00240	-0.00242	-0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00107	0.00108	0.00098
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00094	0.00095	0.00094
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00241	0.00243	0.00243
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00241	0.00243	0.00243

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00096	-0.00097	-0.00096
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00095	-0.00096	-0.00096
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00218	-0.00220	-0.00219
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00218	-0.00220	-0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00108	0.00109	0.00099
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00096	0.00096	0.00096
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00222	0.00221	0.00219
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00222	0.00220	0.00219

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__buf_1	6.34920
sky130_osu_sc_12T_ls__buf_2	8.30280
sky130_osu_sc_12T_ls__buf_4	12.21000
sky130_osu_sc_12T_ls__buf_6	16.11720
sky130_osu_sc_12T_ls__buf_8	20.02440
sky130_osu_sc_12T_ls__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__buf_1	0.00297	1.13303
sky130_osu_sc_12T_ls__buf_2	0.00297	2.35691
sky130_osu_sc_12T_ls__buf_4	0.00296	4.69128
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00297	9.23805
sky130_osu_sc_12T_ls__buf_l	0.00225	0.82002

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00598	0.00598
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00898	0.01185
sky130_osu_sc_12T_ls__buf_4	0.00000	0.01496	0.02358
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.02693	0.04704
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00071	0.00071

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (RR)**	0.04853	0.51384	5.85602
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.05057	0.42777	5.92097
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.06745	0.40674	6.19343
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.10133	0.43521	6.57550
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.05270	0.57207	5.79878

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__buf_1	**A->Y (FF)**	0.05502	0.48242	5.39814
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.06541	0.48026	5.74048
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.09360	0.51461	6.11301
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.15107	0.58644	6.55395
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.05943	0.50742	5.36209

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00268	0.00241	0.01073
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00518	0.00505	0.01411
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01085	0.01121	0.02065
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02224	0.02318	0.03194
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00211	0.00209	0.01189

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__buf_1	A	0.00000	0.00000	0.00000
	A	0.00712	0.00722	0.01560
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00916	0.00940	0.01774
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01426	0.01487	0.02292
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02518	0.02629	0.03370
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00559	0.00583	0.01520

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	-0.00061	-0.00061	-0.00060

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
	0.00061	0.00061	0.00060

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__dffr_1	42.49080
sky130_osu_sc_12T_ls__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ls__dffr_1	0.00271	0.00272	0.00862	1.21848	1.21778
sky130_osu_sc_12T_ls__dffr_l	0.00271	0.00272	0.00861	0.81986	0.80978

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.01856	0.03033
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.01329	0.02506

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RR)	0.26791	1.12795	12.11380
	QN->Q (FR)	0.02849	0.81826	13.15530
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.26474	1.20920	11.47740
	QN->Q (FR)	0.03325	0.87763	12.72030

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->Q (RF)	0.25176	1.13130	12.64150
	QN->Q (RF)	0.01670	0.46573	7.48536
	RN->Q (FF)	0.18906	1.27235	15.86180
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.25934	1.24458	12.17200
	QN->Q (RF)	0.01763	0.46095	6.72749
	RN->Q (FF)	0.19686	1.38474	15.38680

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	CK->QN (RR)	0.22970	0.70340	6.09299
	RN->QN (FR)	0.16690	0.84442	9.31300
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.23422	0.77749	6.03323
	RN->QN (FR)	0.17162	0.91801	9.24663

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffr_1	**CK->QN (RF)**	0.22342	0.50503	2.65117
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.21472	0.49865	2.21696

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.04340	-0.06437	-0.21580
	setup	CK (R)	0.20861	0.24139	0.67994
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.04486	-0.06471	-0.21669
	setup	CK (R)	0.20761	0.24184	0.67542

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.10984	-0.33793	-4.87338
	setup	CK (R)	0.13106	0.35415	4.89039
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.11275	-0.34174	-4.87236
	setup	CK (R)	0.13082	0.35015	4.89192

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.04340	-0.06437	-0.21580
	setup	CK (R)	0.20861	0.24139	0.67994
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.04486	-0.06471	-0.21669
	setup	CK (R)	0.20761	0.24184	0.67542

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	hold	CK (R)	-0.10984	-0.33793	-4.87338
	setup	CK (R)	0.13106	0.35415	4.89039
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.11275	-0.34174	-4.87236
	setup	CK (R)	0.13082	0.35015	4.89192

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.18860	0.21805	0.81071
	removal	CK (R)	-0.04416	-0.05168	-0.11461
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.18884	0.21843	0.80820
	removal	CK (R)	-0.04416	-0.05168	-0.11461

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	recovery	CK (R)	0.18860	0.21805	0.81071
	removal	CK (R)	-0.04416	-0.05168	-0.11461
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.18884	0.21843	0.80820
	removal	CK (R)	-0.04416	-0.05168	-0.11461

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffr_1	min_pulse_width	RN ()	0.11795	0.38818	13.33370
	min_pulse_width	RN ()	0.11795	0.38818	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.11795	0.38818	13.33370
	min_pulse_width	RN ()	0.11795	0.38818	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_12T_ls__dffr_1	min_pulse_width	CK ()	0.12383	0.38818	13.33370
	min_pulse_width	CK ()	0.12676	0.38818	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.11501	0.38818	13.33370
	min_pulse_width	CK ()	0.12383	0.38818	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_12T_ls__dffr_1	min_pulse_width	CK ()	0.27379	0.39269	13.33370
	min_pulse_width	CK ()	0.10620	0.38818	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.27379	0.39269	13.33370
	min_pulse_width	CK ()	0.10620	0.38818	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00521	0.00000
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00655	0.00512	0.00177

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00834	0.00693	0.00000
	RN	-0.00094	-0.05944	-0.94359
	RN	0.01888	0.01767	0.00657
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00763	0.00671	0.00544
	RN	-0.00094	-0.04686	-0.63490
	RN	0.01816	0.01744	0.01583

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00834	0.00694	0.00000
	RN	-0.00094	-0.05942	-0.94305
	RN	0.01888	0.01767	0.00675
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00763	0.00671	0.00575
	RN	-0.00094	-0.04652	-0.62709
	RN	0.01816	0.01745	0.01602

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00723	0.00522	0.00000
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00653	0.00510	0.00156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00184	-0.00205	-0.00205
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00919	0.00874	0.01580
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00361	0.00324	0.01039
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00184	-0.00205	-0.00205
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00919	0.00874	0.01580
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00361	0.00324	0.01039

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00203	0.00206	0.00205
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01361	0.01332	0.01999
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00670	0.00646	0.01283
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00203	0.00206	0.00205
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01361	0.01332	0.01999
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00670	0.00646	0.01283

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00283	0.00262	0.01449
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00865	0.00819	0.02012
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00283	0.00262	0.01449
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00865	0.00819	0.02012

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00733	0.00746	0.01871
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01438	0.01411	0.02535
sky130_osu_sc_12T_ls__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00733	0.00746	0.01871
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01438	0.01411	0.02535

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00054	-0.00096	0.01100
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00476	0.00357	0.01574
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00057	-0.00096	0.01100
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00054	-0.00096	0.01100
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00476	0.00357	0.01573
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00057	-0.00096	0.01100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01114	0.01098	0.02264
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02279	0.02209	0.03495
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01699	0.01664	0.02775
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02204	0.02170	0.04200
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01196	0.01172	0.02295
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01114	0.01098	0.02264
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02279	0.02209	0.03495
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01699	0.01664	0.02775
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02204	0.02168	0.04200
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01196	0.01172	0.02295

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__dffsr_1	46.39800
sky130_osu_sc_12T_ls__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ls__dffsr_1	0.00268	0.00273	0.00634	0.00872	1.27061	1.27445
sky130_osu_sc_12T_ls__dffsr_l	0.00268	0.00273	0.00634	0.00872	0.80560	0.81366

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.02300	0.03043
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.01773	0.02516

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RR)	0.27279	1.14354	12.43030
	QN->Q (FR)	0.02671	0.79132	12.83880
	RN->Q (RR)	0.22016	1.10313	12.48530
	SN->Q (FR)	0.21154	1.28768	15.88040
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.27435	1.21729	11.30400
	QN->Q (FR)	0.03316	0.87101	12.58350
	RN->Q (RR)	0.22209	1.17733	11.35820
	SN->Q (FR)	0.21342	1.36094	14.74300

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->Q (RF)	0.28357	1.16854	12.93350
	QN->Q (RF)	0.01657	0.47176	7.66107
	RN->Q (FF)	0.20021	1.29175	16.16640
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.29336	1.27140	11.98840
	QN->Q (RF)	0.01752	0.45749	6.64790
	RN->Q (FF)	0.21007	1.39384	15.21290

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RR)	0.26149	0.73403	6.18628
	RN->QN (FR)	0.17818	0.85742	9.41667
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.26829	0.81628	6.11469
	RN->QN (FR)	0.18498	0.93885	9.33899

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffsr_1	CK->QN (RF)	0.23124	0.52463	2.84830
	RN->QN (RF)	0.18002	0.48578	2.91129
	SN->QN (FF)	0.17095	0.67000	6.30949
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.22645	0.51773	2.27169
	RN->QN (RF)	0.17540	0.47973	2.33104
	SN->QN (FF)	0.16629	0.66237	5.71783

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.04568	-0.06864	-0.25674
	setup	CK (R)	0.20801	0.23865	0.72814
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.04540	-0.06864	-0.25814
	setup	CK (R)	0.20730	0.23830	0.72997

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.12864	-0.35814	-4.95485
	setup	CK (R)	0.15332	0.36673	4.97122
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.12663	-0.35863	-4.95504
	setup	CK (R)	0.15332	0.36673	4.97122

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.04568	-0.06864	-0.25674
	setup	CK (R)	0.20801	0.23865	0.72814
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.04540	-0.06864	-0.25814
	setup	CK (R)	0.20730	0.23830	0.72997

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	hold	CK (R)	-0.12864	-0.35814	-4.95485
	setup	CK (R)	0.15332	0.36673	4.97122
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.12663	-0.35863	-4.95504
	setup	CK (R)	0.15332	0.36673	4.97122

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.17183	0.19621	0.78993
	removal	CK (R)	-0.02362	-0.03023	-0.07620
	hold	SN (R)	-0.16488	-0.29459	-1.41687
	setup	SN (R)	0.18803	0.32807	2.99280
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.17394	0.19585	0.78988
	removal	CK (R)	-0.02761	-0.03023	-0.07620
	hold	SN (R)	-0.16030	-0.28715	-1.36686
	setup	SN (R)	0.18568	0.32044	2.88868

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.17183	0.19621	0.78993
	removal	CK (R)	-0.02362	-0.03023	-0.07620
	hold	SN (R)	-0.16490	-0.29591	-1.41687
	hold	SN (R)	-0.16488	-0.29459	-1.42144
	setup	SN (R)	0.18613	0.32582	2.81954
	setup	SN (R)	0.18803	0.32807	2.99280
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.17394	0.19585	0.78988
	removal	CK (R)	-0.02761	-0.03023	-0.07620
	hold	SN (R)	-0.16280	-0.28851	-1.36686
	hold	SN (R)	-0.16030	-0.28715	-1.37840
	setup	SN (R)	0.18568	0.31957	2.69143
	setup	SN (R)	0.17993	0.32044	2.88868

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	RN ()	0.13851	0.38818	13.33370
	min_pulse_width	RN ()	0.14145	0.38818	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.13851	0.38818	13.33370
	min_pulse_width	RN ()	0.13851	0.38818	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.02877	0.05603	2.65495
	removal	CK (R)	-0.01057	-0.04379	-0.23871
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.02589	0.05789	2.58472
	removal	CK (R)	-0.01057	-0.04379	-0.23871

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	recovery	CK (R)	0.02877	0.05603	2.65495
	removal	CK (R)	-0.01057	-0.04379	-0.23871
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.02589	0.05789	2.58472
	removal	CK (R)	-0.01057	-0.04379	-0.23871

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	min_pulse_width	SN ()	0.17082	0.38818	13.33370
	min_pulse_width	SN ()	0.17670	0.38818	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.17082	0.38818	13.33370
	min_pulse_width	SN ()	0.16789	0.38818	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_12T_ls__dffsr_1	min_pulse_width	CK ()	0.11795	0.38818	13.33370
	min_pulse_width	CK ()	0.14732	0.38818	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.11501	0.38818	13.33370
	min_pulse_width	CK ()	0.14439	0.38818	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_12T_ls__dffsr_1	min_pulse_width	CK ()	0.27363	0.38818	13.33370
	min_pulse_width	CK ()	0.12676	0.38818	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.27363	0.38818	13.33370
	min_pulse_width	CK ()	0.12676	0.38818	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00901	0.00695	-0.00190
	RN	0.01650	0.01461	-0.00729
	SN	-0.00094	-0.06095	-0.98396
	SN	0.01839	0.01635	-0.00724
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00836	0.00695	0.00372
	RN	0.01584	0.01460	0.00726
	SN	-0.00094	-0.04637	-0.62386
	SN	0.01773	0.01634	0.00737

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00955	0.00848	0.00190
	RN	-0.00094	-0.06095	-0.98396
	RN	0.01994	0.01901	0.01231
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00885	0.00800	0.00698
	RN	-0.00094	-0.04637	-0.62386
	RN	0.01923	0.01852	0.01758

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00955	0.00848	0.00200
	RN	-0.00094	-0.06106	-0.98694
	RN	0.01975	0.01882	0.01208
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00885	0.00800	0.00707
	RN	-0.00094	-0.04665	-0.63010
	RN	0.01904	0.01833	0.01726

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00898	0.00693	-0.00200
	RN	0.01647	0.01459	-0.00743
	SN	-0.00094	-0.06106	-0.98690
	SN	0.01836	0.01630	-0.00738
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00833	0.00691	0.00317
	RN	0.01581	0.01457	0.00689
	SN	-0.00094	-0.04665	-0.63008
	SN	0.01770	0.01631	0.00739

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00200	-0.00207	-0.00207
	(!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)	0.01155	0.01112	0.01807
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00391	0.00358	0.01062
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00388	0.00355	0.01057
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00393	0.00360	0.01064
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00201	-0.00207	-0.00207
	(!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)	0.01155	0.01112	0.01807
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00391	0.00358	0.01062
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00388	0.00355	0.01057
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00393	0.00360	0.01064

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00209	0.00208	0.00207
	(!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)	0.01559	0.01528	0.02132
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00741	0.00720	0.01338
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00744	0.00723	0.01340
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00739	0.00718	0.01335
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00209	0.00208	0.00207
	(!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)	0.01559	0.01528	0.02132
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00741	0.00720	0.01338
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00744	0.00723	0.01340
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00739	0.00718	0.01335

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00218	0.00193	0.01375
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01016	0.00960	0.02140
sky130_osu_sc_12T_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)	0.00218	0.00193	0.01375
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01016	0.00960	0.02140

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00810	0.00824	0.01961
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01534	0.01499	0.02629
sky130_osu_sc_12T_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)	0.00810	0.00824	0.01961
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01534	0.01499	0.02629

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00535	-0.00537	-0.00539
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00562	-0.00580	-0.00578
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00529	-0.00539	-0.00536
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00229	0.00211	0.00994
sky130_osu_sc_12T_ls__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00535	-0.00537	-0.00539
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00562	-0.00580	-0.00578
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00529	-0.00539	-0.00536
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00229	0.00206	0.00994

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00538	0.00549	0.00540
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00577	0.00581	0.00578
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00534	0.00539	0.00537
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01246	0.01212	0.01789
sky130_osu_sc_12T_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)	0.00538	0.00549	0.00540
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00577	0.00581	0.00578
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00534	0.00539	0.00537
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01246	0.01212	0.01789

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00060	-0.00103	0.01090
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00567	0.00452	0.01663
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00562	0.00444	0.01657
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00043	-0.00083	0.01110
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00262	0.00190	0.02493
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00060	-0.00103	0.01090
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00567	0.00452	0.01663
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00562	0.00444	0.01656
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00043	-0.00083	0.01110
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00262	0.00190	0.02493

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ls__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02542	0.02476	0.03744
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01136	0.01117	0.02282
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01721	0.01688	0.02812
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01727	0.01688	0.02814
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02411	0.02361	0.04377
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01197	0.01172	0.02293
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01519	0.01490	0.03700
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02542	0.02476	0.03744
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01136	0.01116	0.02282
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01721	0.01688	0.02812
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01727	0.01688	0.02814
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02411	0.02360	0.04377
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01197	0.01172	0.02293
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01520	0.01488	0.03699

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__dffs_1	38.58360
sky130_osu_sc_12T_ls__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ls__dffs_1	0.00269	0.00530	0.00854	1.22115	1.22612
sky130_osu_sc_12T_ls__dffs_l	0.00269	0.00530	0.00854	0.81374	0.82009

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.01772	0.02431
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.01245	0.01903

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RR)	0.19420	1.03976	12.02360
	QN->Q (FR)	0.02847	0.81821	13.12100
	SN->Q (FR)	0.16320	1.24324	15.47090
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.19611	1.12413	11.28550
	QN->Q (FR)	0.03321	0.87287	12.62930
	SN->Q (FR)	0.16530	1.32479	14.72450

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->Q (RF)	0.27029	1.15195	12.65690
	QN->Q (RF)	0.01663	0.46357	7.46651
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.27707	1.25857	12.07250
	QN->Q (RF)	0.01757	0.45794	6.67576

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RR)	0.24802	0.72543	6.14147
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.25187	0.80025	6.12650

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dffs_1	CK->QN (RF)	0.15570	0.42173	2.57911
	SN->QN (FF)	0.12402	0.62509	6.03654
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.15189	0.42303	2.16766
	SN->QN (FF)	0.12026	0.62323	5.59944

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.03012	-0.05424	-0.20121
	setup	CK (R)	0.14433	0.18282	0.60505
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.03027	-0.05424	-0.20220
	setup	CK (R)	0.14491	0.18238	0.61077

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.11386	-0.34349	-4.89663
	setup	CK (R)	0.14333	0.35646	4.91650
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.11272	-0.34198	-4.89802
	setup	CK (R)	0.14228	0.35646	4.91650

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.03012	-0.05424	-0.20121
	setup	CK (R)	0.14433	0.18282	0.60505
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.03027	-0.05424	-0.20220
	setup	CK (R)	0.14491	0.18238	0.61077

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	hold	CK (R)	-0.11386	-0.34349	-4.89663
	setup	CK (R)	0.14333	0.35646	4.91650
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.11272	-0.34198	-4.89802
	setup	CK (R)	0.14228	0.35646	4.91650

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.03082	0.05789	2.09550
	removal	CK (R)	-0.01521	-0.04042	-0.17375
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.03005	0.05751	1.99794
	removal	CK (R)	-0.01521	-0.04042	-0.17375

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	recovery	CK (R)	0.03082	0.05789	2.09550
	removal	CK (R)	-0.01521	-0.04042	-0.17375
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.03005	0.05751	1.99794
	removal	CK (R)	-0.01521	-0.04042	-0.17375

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dffs_1	min_pulse_width	SN ()	0.11795	0.38818	13.33370
	min_pulse_width	SN ()	0.12383	0.38818	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.11501	0.38818	13.33370
	min_pulse_width	SN ()	0.11795	0.38818	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_12T_ls__dffs_1	min_pulse_width	CK ()	0.07683	0.38818	13.33370
	min_pulse_width	CK ()	0.13264	0.38818	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.07389	0.38818	13.33370
	min_pulse_width	CK ()	0.12970	0.38818	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_12T_ls__dffs_1	min_pulse_width	CK ()	0.20901	0.38818	13.33370
	min_pulse_width	CK ()	0.11795	0.38818	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.20901	0.38818	13.33370
	min_pulse_width	CK ()	0.11795	0.38818	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00724	0.00513	0.00000
	SN	-0.00094	-0.05952	-0.94566
	SN	0.01574	0.01379	-0.00420
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00654	0.00506	0.00215
	SN	-0.00094	-0.04665	-0.63016
	SN	0.01503	0.01372	0.00912

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00829	0.00695	0.00000
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00759	0.00672	0.00570

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00830	0.00694	0.00000
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00759	0.00672	0.00588

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00722	0.00516	0.00000
	SN	-0.00094	-0.05966	-0.94947
	SN	0.01571	0.01379	-0.00433
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00651	0.00506	0.00164
	SN	-0.00094	-0.04687	-0.63505
	SN	0.01501	0.01370	0.00869

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00204	-0.00210	-0.00210
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00902	0.00853	0.01572
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00359	0.00325	0.01038
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00204	-0.00210	-0.00210
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00902	0.00853	0.01572
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00359	0.00325	0.01038

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00212	0.00211	0.00210
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01359	0.01325	0.01957
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00682	0.00659	0.01296
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00212	0.00211	0.00210
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01359	0.01325	0.01957
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00682	0.00659	0.01296

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00397	-0.00399	-0.00400
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00257	0.00232	0.01223
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00397	-0.00401	-0.00400
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00257	0.00232	0.01223

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00402	0.00404	0.00401
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00873	0.00840	0.01839
sky130_osu_sc_12T_ls__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00402	0.00404	0.00401
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00873	0.00840	0.01839

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00054	-0.00096	0.01100
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00050	-0.00088	0.01108
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00237	0.00169	0.02497
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00054	-0.00096	0.01100
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00050	-0.00088	0.01108
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00237	0.00169	0.02497

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02271	0.02205	0.03512
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01115	0.01098	0.02266
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02190	0.02139	0.04167
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01189	0.01165	0.02289
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01437	0.01414	0.03653
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02271	0.02205	0.03512
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01115	0.01098	0.02266
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02190	0.02139	0.04170
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01189	0.01165	0.02289
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01437	0.01417	0.03653

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00285	0.00841	1.11594
sky130_osu_sc_12T_ls__dff_l	0.00285	0.00839	0.76619

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.02129	0.02431
sky130_osu_sc_12T_ls__dff_l	0.00000	0.01602	0.01904

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	**CK->Q (RR)**	0.15659	0.63651	5.96893
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RR)**	0.15861	0.70652	5.92185

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__dff_1	**CK->Q (RF)**	0.23601	0.48867	2.40444
sky130_osu_sc_12T_ls__dff_l	**CK->Q (RF)**	0.24065	0.50530	2.11942

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	hold	CK (R)	-0.02700	-0.04997	-0.20493
	setup	CK (R)	0.10526	0.15173	0.57014
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.02695	-0.05010	-0.20523
	setup	CK (R)	0.10434	0.15172	0.57093

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	hold	CK (R)	-0.10236	-0.34165	-4.92614
	setup	CK (R)	0.12622	0.35290	4.93944
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.10293	-0.34165	-4.92627
	setup	CK (R)	0.12622	0.35290	4.93944

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ls__dff_1	min_pulse_width	CK ()	0.06214	0.38818	13.33370
	min_pulse_width	CK ()	0.12089	0.38818	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.05920	0.38818	13.33370
	min_pulse_width	CK ()	0.11795	0.38818	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_12T_ls__dff_1	**min_pulse_width**	**CK ()**	0.16789	0.38818	13.33370
	min_pulse_width	**CK ()**	0.10033	0.38818	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.16789	0.38818	13.33370
	min_pulse_width	**CK ()**	0.10033	0.38818	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01519	0.01397	0.03464
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01375	0.01262	0.03318

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01683	0.01586	0.02784
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01543	0.01450	0.02641

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00183	-0.00205	-0.00203
	!CK	0.00000	0.00000	0.00000
	!CK	0.00792	0.00756	0.01460
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00183	-0.00205	-0.00203
	!CK	0.00000	0.00000	0.00000
	!CK	0.00792	0.00756	0.01460

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00202	0.00205	0.00203
	!CK	0.00000	0.00000	0.00000
	!CK	0.01398	0.01361	0.02004
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00202	0.00205	0.00203
	!CK	0.00000	0.00000	0.00000
	!CK	0.01398	0.01361	0.02004

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00057	-0.00099	0.01099
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00049	-0.00088	0.01110
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00058	-0.00097	0.01099
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00049	-0.00088	0.01110

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01112	0.01098	0.02264
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02162	0.02100	0.03439
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02217	0.02173	0.04227
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01182	0.01158	0.02283
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01112	0.01098	0.02264
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02162	0.02100	0.03439
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02217	0.02173	0.04227
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01182	0.01158	0.02283

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__inv_1	4.39560
sky130_osu_sc_12T_ls__inv_10	21.97800
sky130_osu_sc_12T_ls__inv_2	6.34920
sky130_osu_sc_12T_ls__inv_3	8.30280
sky130_osu_sc_12T_ls__inv_4	10.25640
sky130_osu_sc_12T_ls__inv_6	14.16360
sky130_osu_sc_12T_ls__inv_8	18.07080
sky130_osu_sc_12T_ls__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__inv_1	0.00276	1.11909
sky130_osu_sc_12T_ls__inv_10	0.02458	11.15568
sky130_osu_sc_12T_ls__inv_2	0.00511	2.31222
sky130_osu_sc_12T_ls__inv_3	0.00756	3.40758
sky130_osu_sc_12T_ls__inv_4	0.00995	4.57820
sky130_osu_sc_12T_ls__inv_6	0.01490	6.83785
sky130_osu_sc_12T_ls__inv_8	0.01974	9.19660
sky130_osu_sc_12T_ls__inv_l	0.00221	0.74318

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00299	0.00587
sky130_osu_sc_12T_ls__inv_10	0.00000	0.02992	0.05865
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00598	0.01173
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00898	0.01760
sky130_osu_sc_12T_ls__inv_4	0.00000	0.01197	0.02346
sky130_osu_sc_12T_ls__inv_6	0.00000	0.01795	0.03519
sky130_osu_sc_12T_ls__inv_8	0.00000	0.02394	0.04692
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00036	0.00061

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (FR)**	0.02747	0.75713	11.88750
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.03255	0.49661	11.82200
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.02027	0.63463	11.78780
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.02180	0.59284	11.87130
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.02159	0.56105	11.79300
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.02417	0.52735	11.81870
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.02800	0.50893	11.92440
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.03331	0.81963	11.65570

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__inv_1	**A->Y (RF)**	0.01502	0.39641	6.16336
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02058	0.23635	6.45179
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01215	0.33748	6.33006
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01321	0.31252	6.46076
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01312	0.28892	6.45021
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.01567	0.26374	6.49465
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.01810	0.24932	6.56517
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.01650	0.40318	5.60921

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	0.00355	0.00360	0.00480
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02887	0.03062	0.04295
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00610	0.00565	0.00874
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00938	0.00862	0.01332
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01193	0.01240	0.01731
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01764	0.01876	0.02588
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02326	0.02449	0.03428
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00284	0.00264	0.00423

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__inv_1	A	0.00000	0.00000	0.00000
	A	-0.00059	-0.00059	0.00037
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01028	-0.00943	0.00112
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00196	-0.00183	0.00011
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00256	-0.00236	0.00056
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00401	-0.00370	0.00030
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00613	-0.00552	0.00050
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	-0.00827	-0.00718	0.00076
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00044	-0.00044	0.00049

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ls__mux2_1	0.20796	0.20790	0.00569	0.20539

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00898	0.01759

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (RR)	-	0.00954	0.17357	1.40781
	A1->Y (RR)	-	0.01131	0.17561	1.40744
	S0->Y (RR)	(!A0 * A1)	0.03367	0.18628	0.03260
	S0->Y (FR)	(A0 * !A1)	0.03007	0.36360	3.42468

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__mux2_1	A0->Y (FF)	-	0.01156	0.18945	1.81650
	A1->Y (FF)	-	0.01054	0.18714	1.80953
	S0->Y (FF)	(!A0 * A1)	0.05623	0.34682	2.81065
	S0->Y (RF)	(A0 * !A1)	0.01696	0.18339	0.93733

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00360	-0.00361	-0.00361
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00226	-0.00226	-0.00226
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00476	0.00484	0.01747
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00221	-0.00246	0.01023

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00360	0.00361	0.00361
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00226	0.00226	0.00226
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00058	0.00040	0.01333
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00972	0.00970	0.02175

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00085	-0.00085	-0.00085

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00085	0.00085	0.00085

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00103	-0.00103	-0.00103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00103	0.00103	0.00103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00083	-0.00104	0.01180
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00080	-0.00104	0.01179

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00750	0.00747	0.01964
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00697	0.00701	0.01955

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__nand2_1	6.34920
sky130_osu_sc_12T_ls__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nand2_1	0.00274	0.00274	1.12824
sky130_osu_sc_12T_ls__nand2_l	0.00217	0.00219	0.74036

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00301	0.01173
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00038	0.00123

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (FR)	0.02886	0.76345	11.99010
	B->Y (FR)	0.03328	0.73188	11.42860
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.03390	0.81915	11.65570
	B->Y (FR)	0.04125	0.82649	11.63680

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nand2_1	A->Y (RF)	0.02025	0.47532	7.38947
	B->Y (RF)	0.02355	0.47568	7.29988
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.02237	0.48930	6.80461
	B->Y (RF)	0.02544	0.48301	6.59749

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00377	0.00379	0.00489
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00486	0.00592
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00289	0.00254	0.00416
	B	0.00000	0.00000	0.00000
	B	0.00371	0.00350	0.00496

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00034	-0.00038	0.00051
	B	0.00000	0.00000	0.00000
	B	-0.00033	-0.00040	0.00020
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00026	0.00059
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00027	0.00034

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00242	-0.00245	-0.00244
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00174	-0.00175	-0.00175

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00244	0.00246	0.00245
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00175	0.00177	0.00176

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00222	-0.00224	-0.00223
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00161	-0.00162	-0.00162

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00226	0.00224	0.00223
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00164	0.00163	0.00162

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__nor2_1	6.34920
sky130_osu_sc_12T_ls__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nor2_1	0.00270	0.00298	0.62392
sky130_osu_sc_12T_ls__nor2_l	0.00208	0.00230	0.41518

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00305	0.00587
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00039	0.00061

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (FR)	0.05942	0.89812	11.67240
	B->Y (FR)	0.04718	0.88769	11.80060
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.06834	0.98948	11.49480
	B->Y (FR)	0.05806	0.97742	11.59230

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__nor2_1	A->Y (RF)	0.01943	0.32519	4.13041
	B->Y (RF)	0.01595	0.31801	4.11694
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.01995	0.32888	3.69153
	B->Y (RF)	0.01729	0.32267	3.67971

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00499	0.00489	0.00546
	B	0.00000	0.00000	0.00000
	B	0.00392	0.00390	0.00536
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00368	0.00361	0.00432
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00298	0.00472

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00044	0.00031	0.00162
	B	0.00000	0.00000	0.00000
	B	-0.00047	-0.00043	0.00086
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00031	0.00023	0.00153
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00027	0.00097

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00183	-0.00206	-0.00206
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00126	-0.00143	-0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00204	0.00207	0.00206
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00141	0.00143	0.00142

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00096	-0.00096	-0.00096
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00069	-0.00069	-0.00069

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00100	0.00101	0.00097
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00072	0.00072	0.00070

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__oai21_l	0.00274	0.00283	0.00245	0.61986

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00181	0.00648

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (FR)	0.06816	0.90876	11.80660
	A1->Y (FR)	0.08341	0.92269	11.67620
	B0->Y (FR)	0.04148	0.77360	10.52340

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai21_l	A0->Y (RF)	0.02843	0.39088	4.95307
	A1->Y (RF)	0.03256	0.39136	4.89621
	B0->Y (RF)	0.02195	0.40765	5.32253

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00551	0.00542	0.00676
	A1	0.00000	0.00000	0.00000
	A1	0.00663	0.00648	0.00701
	B0	0.00441	0.00436	0.00590

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00024	0.00018	0.00097
	A1	0.00000	0.00000	0.00000
	A1	0.00117	0.00098	0.00178
	B0	0.00153	0.00149	0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00096	-0.00097	-0.00096
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00205	-0.00210	-0.00210
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00213	-0.00214	-0.00214

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00101	0.00101	0.00098
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00208	0.00210	0.00210
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00213	0.00215	0.00214

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00176	-0.00199	-0.00198
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00201	-0.00208	-0.00208
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00210	-0.00211	-0.00211

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00197	0.00199	0.00198
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00207	0.00208	0.00208
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00211	0.00213	0.00211

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00183	-0.00185	-0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00187	0.00189	0.00188

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_1	0.00257	0.00270	0.00288	0.00284	0.65075

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00460	0.01173

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (FR)	0.08817	0.91508	11.65200
	A1->Y (FR)	0.07646	0.90433	11.80110
	B0->Y (FR)	0.05003	0.87892	11.78260
	B1->Y (FR)	0.06293	0.88929	11.63530

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__oai22_l	A0->Y (RF)	0.04387	0.41961	5.15835
	A1->Y (RF)	0.03633	0.40893	5.13169
	B0->Y (RF)	0.03025	0.42598	5.51311
	B1->Y (RF)	0.03824	0.43970	5.58467

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00843	0.00830	0.00883
	A1	0.00732	0.00723	0.00854
	B0	0.00527	0.00520	0.00648
	B1	0.00646	0.00630	0.00679

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00175	0.00157	0.00234
	A1	0.00093	0.00084	0.00160
	B0	-0.00013	-0.00012	0.00107
	B1	0.00176	0.00159	0.00268

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00181	-0.00201	-0.00201
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00181	-0.00202	-0.00201
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00195	-0.00200	-0.00201
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00203	-0.00204	-0.00204

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00199	0.00201	0.00201
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00199	0.00202	0.00201
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00200	0.00202	0.00201
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00204	0.00205	0.00205

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00093	-0.00094	-0.00093
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00093	-0.00094	-0.00093
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00194	-0.00201	-0.00200
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00203	-0.00205	-0.00204

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00098	0.00098	0.00095
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00098	0.00098	0.00095
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00199	0.00201	0.00200
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00203	0.00205	0.00204

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00094	-0.00095	-0.00094
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00094	-0.00095	-0.00094
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00233	-0.00240	-0.00239
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00237	-0.00238	-0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00099	0.00099	0.00096
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00099	0.00100	0.00096
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00241	0.00243	0.00239
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00241	0.00244	0.00243

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00179	-0.00201	-0.00199
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00179	-0.00201	-0.00199
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00237	-0.00245	-0.00244
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00242	-0.00244	-0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00198	0.00201	0.00199
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00198	0.00202	0.00199
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00246	0.00248	0.00244
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00246	0.00249	0.00247

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__or2_1	8.30280
sky130_osu_sc_12T_ls__or2_2	10.25640
sky130_osu_sc_12T_ls__or2_4	14.16360
sky130_osu_sc_12T_ls__or2_8	21.97800
sky130_osu_sc_12T_ls__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__or2_1	0.00305	0.00282	1.14831
sky130_osu_sc_12T_ls__or2_2	0.00305	0.00282	2.36044
sky130_osu_sc_12T_ls__or2_4	0.00305	0.00282	4.64018
sky130_osu_sc_12T_ls__or2_8	0.00305	0.00283	9.06554
sky130_osu_sc_12T_ls__or2_l	0.00233	0.00219	0.75962

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00461	0.00610
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00616	0.01197
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00927	0.02370
sky130_osu_sc_12T_ls__or2_8	0.00000	0.01550	0.04716
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00061	0.00081

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (RR)	0.05503	0.54102	5.96746
	B->Y (RR)	0.04971	0.52341	5.92498
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.05772	0.44960	5.96401
	B->Y (RR)	0.05196	0.43369	5.91576
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.07481	0.42320	6.17301
	B->Y (RR)	0.06902	0.41049	6.13028
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.10855	0.44798	6.53610
	B->Y (RR)	0.10277	0.43799	6.49611
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.06017	0.60339	5.65143
	B->Y (RR)	0.05560	0.58678	5.63709

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__or2_1	A->Y (FF)	0.10198	0.55520	5.71231
	B->Y (FF)	0.08398	0.53501	5.68956
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.12288	0.55745	6.01675
	B->Y (FF)	0.10518	0.54480	5.98310
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.17416	0.60947	6.39833
	B->Y (FF)	0.15647	0.60062	6.34814
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.27873	0.72608	6.86498
	B->Y (FF)	0.26102	0.71518	6.82939
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.11425	0.57621	5.41859
	B->Y (FF)	0.09683	0.55936	5.40525

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00372	0.00323	0.01033
	B	0.00000	0.00000	0.00000
	B	0.00287	0.00283	0.01139
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00625	0.00601	0.01359
	B	0.00000	0.00000	0.00000
	B	0.00534	0.00561	0.01455
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01195	0.01217	0.02031
	B	0.00000	0.00000	0.00000
	B	0.01103	0.01191	0.02144
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02341	0.02529	0.03210
	B	0.00000	0.00000	0.00000
	B	0.02240	0.02396	0.03348
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00287	0.00267	0.00889
	B	0.00000	0.00000	0.00000
	B	0.00228	0.00234	0.01016

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00859	0.00819	0.01305
	B	0.00000	0.00000	0.00000
	B	0.00720	0.00737	0.01700
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01069	0.01060	0.01517
	B	0.00000	0.00000	0.00000
	B	0.00929	0.00964	0.01852
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01617	0.01606	0.02047
	B	0.00000	0.00000	0.00000
	B	0.01460	0.01501	0.02308
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02877	0.02711	0.03130
	B	0.00000	0.00000	0.00000
	B	0.02740	0.02674	0.03348
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00651	0.00626	0.01123
	B	0.00000	0.00000	0.00000
	B	0.00555	0.00578	0.01511

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00187	-0.00208	-0.00208
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00186	-0.00208	-0.00208
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00186	-0.00209	-0.00208
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00186	-0.00209	-0.00208
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00127	-0.00143	-0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00206	0.00209	0.00208
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00206	0.00209	0.00208
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00206	0.00209	0.00208
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00206	0.00209	0.00208
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00142	0.00143	0.00143

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00096	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00096	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00096	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00096	-0.00096	-0.00096
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00067	-0.00067	-0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00098
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00098
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00098
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00101	0.00102	0.00098
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00071	0.00071	0.00068

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__tbufi_1	8.30280
sky130_osu_sc_12T_ls__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tbufi_1	0.00295	0.00391	0.64905
sky130_osu_sc_12T_ls__tbufi_l	0.00231	0.00306	0.41507

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00306	0.01173
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00042	0.00123

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (FR)	0.04320	0.87133	11.76090
	OE->Y (FR)	0.04353	0.29700	5.01960
	OE->Y (RR)	0.06731	0.63709	5.97770
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.05580	0.97477	11.59350
	OE->Y (FR)	0.04692	0.29706	5.01960
	OE->Y (RR)	0.07753	0.74003	5.84076

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tbufi_1	A->Y (RF)	0.01961	0.38529	5.09317
	OE->Y (FF)	0.04399	0.29700	5.01963
	OE->Y (RF)	0.01949	0.38219	5.03686
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.02196	0.39257	4.53986
	OE->Y (FF)	0.04789	0.29706	5.01957
	OE->Y (RF)	0.02140	0.38177	4.40355

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00362	0.00359	0.00492
	OE	0.00000	0.00000	0.00000
	OE	0.00354	0.00347	0.01495
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00279	0.00275	0.00435
	OE	0.00000	0.00000	0.00000
	OE	0.00263	0.00263	0.01391

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00047	-0.00045	0.00071
	OE	0.00000	0.00000	0.00000
	OE	0.00221	0.00209	0.01520
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00030	-0.00028	0.00085
	OE	0.00000	0.00000	0.00000
	OE	0.00157	0.00154	0.01391

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00170	-0.00172	-0.00171
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00125	-0.00127	-0.00125
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00113	-0.00115	-0.00113

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00170	0.00172	0.00171
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00157	0.00158	0.00155
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00125	0.00127	0.00125
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00116	0.00116	0.00114

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00128	0.00130	0.01450
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00115	0.00109	0.01438
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00092	0.00102	0.01345
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00079	0.00081	0.01331

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00429	0.00428	0.01706
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00445	0.00444	0.01713
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00329	0.00353	0.01564
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00342	0.00364	0.01572

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__tnbufi_1	8.30280
sky130_osu_sc_12T_ls__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tnbufi_1	0.00295	0.00431	0.65795
sky130_osu_sc_12T_ls__tnbufi_l	0.00221	0.00332	0.41524

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00498	0.00598
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00059	0.00071

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (FR)	0.04350	0.87591	11.85860
	OE->Y (RR)	0.01980	0.29687	5.01972
	OE->Y (FR)	0.05333	0.88478	11.71250
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.05475	0.97343	11.59370
	OE->Y (RR)	0.02144	0.29665	5.01953
	OE->Y (FR)	0.06290	0.98601	11.49560

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ls__tnbufi_1	A->Y (RF)	0.01916	0.38717	5.14186
	OE->Y (RF)	0.01964	0.29686	5.01977
	OE->Y (FF)	0.04536	0.44059	4.66344
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.02084	0.39176	4.54036
	OE->Y (RF)	0.02117	0.29664	5.01947
	OE->Y (FF)	0.05148	0.45751	4.38737

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00376	0.00373	0.00504
	OE	0.00000	0.00000	0.00000
	OE	0.00906	0.00933	0.02251
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00288	0.00284	0.00444
	OE	0.00000	0.00000	0.00000
	OE	0.00699	0.00728	0.01975

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00066	-0.00062	0.00052
	OE	0.00000	0.00000	0.00000
	OE	0.00789	0.00818	0.01867
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00049	-0.00046	0.00067
	OE	0.00000	0.00000	0.00000
	OE	0.00609	0.00645	0.01703

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00138	-0.00140	-0.00139
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00123	-0.00124	-0.00123
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00097	-0.00098	-0.00097
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00086	-0.00086	-0.00086

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00138	0.00140	0.00139
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00126	0.00127	0.00125
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00097	0.00098	0.00097
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00088	0.00089	0.00088

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00234	-0.00261	0.01088
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00223	-0.00259	0.01094
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00162	-0.00179	0.01083
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00157	-0.00177	0.01084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00681	0.00710	0.02038
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00670	0.00705	0.02033
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00531	0.00562	0.01815
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00524	0.00567	0.01810

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xnor2_l	0.00590	0.00501	0.67628

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00918	0.01771

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (RR)	B	0.08654	0.67332	6.20474
	A->Y (FR)	!B	0.05870	0.89029	11.91810
	B->Y (RR)	A	0.07051	0.65734	6.21441
	B->Y (FR)	!A	0.07307	0.90027	11.76670

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xnor2_l	A->Y (FF)	B	0.07170	0.49557	4.90167
	A->Y (RF)	!B	0.02728	0.39529	5.19146
	B->Y (FF)	A	0.06509	0.48950	4.90001
	B->Y (RF)	!A	0.03167	0.40247	5.19495

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00382	0.00356	0.01562
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00922	0.00910	0.02311
	B	A	0.00000	0.00000	0.00000
	B	A	0.00173	0.00172	0.01541
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00973	0.00970	0.02283

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01087	0.01054	0.02271
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00255	0.00235	0.01599
	B	A	0.00000	0.00000	0.00000
	B	A	0.01000	0.01014	0.02273
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00313	0.00287	0.01651

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
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_12T_ls__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xor2_l	0.00592	0.00506	0.63164

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00918	0.01223

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (RR)	!B	0.09391	0.68475	6.21372
	A->Y (FR)	B	0.07532	0.91713	11.79390
	B->Y (RR)	!A	0.07567	0.67802	6.22117
	B->Y (FR)	A	0.08291	0.92491	11.79010

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ls__xor2_l	A->Y (FF)	!B	0.07317	0.49703	4.72526
	A->Y (RF)	B	0.02653	0.39403	5.00695
	B->Y (FF)	!A	0.06749	0.48786	4.74957
	B->Y (RF)	A	0.03151	0.39376	4.95877

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01076	0.01069	0.02353
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00242	0.00149	0.01429
	B	A	0.00000	0.00000	0.00000
	B	A	0.01093	0.01092	0.02364
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00165	0.00155	0.01492

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ls__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00192	0.00151	0.01516
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01158	0.01167	0.02170
	B	A	0.00000	0.00000	0.00000
	B	A	0.00196	0.00161	0.01477
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01012	0.01035	0.02266

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_ff_1P76_-40C.ccs
Cell Library: Process , Voltage 1.76,
Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__ant	4.39560
sky130_osu_sc_12T_ls__tiehi	4.39560
sky130_osu_sc_12T_ls__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ls__ant	0.30164
sky130_osu_sc_12T_ls__tiehi	0.00000
sky130_osu_sc_12T_ls__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__ant	0.00000	153214.00000	306428.00000
sky130_osu_sc_12T_ls__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_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_12T_ls__ant	0.00000	0.00000	0.00000
	-0.00160	0.02849	0.47781

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ls__ant	0.00000	0.00000	0.00000
	2.66757	2.54949	0.59557