sky130_osu_sc_12T_ls_tt_1P80_100C.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_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.01157	0.01157	0.00888	1.12481	0.50038	1.00616
sky130_osu_sc_12T_ls__addf_l	0.01157	0.01157	0.00889	0.75869	0.50124	1.00617

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.10211	0.10743
sky130_osu_sc_12T_ls__addf_l	0.00000	0.09690	0.10813

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)	0.16546	1.71816	23.61440
	B->CO (RR)	0.16305	1.69905	23.40350
	CI->CO (RR)	0.15595	1.75395	24.34340
	CON->CO (FR)	0.02923	0.76570	11.36660
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.16831	1.61180	19.18790
	B->CO (RR)	0.16602	1.60305	19.28100
	CI->CO (RR)	0.15895	1.64810	19.95240
	CON->CO (FR)	0.03522	0.84408	11.34250

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)	0.24672	2.23935	30.28230
	B->CO (FF)	0.21886	2.14469	29.20590
	CI->CO (FF)	0.21639	2.23316	30.79460
	CON->CO (RF)	0.02252	0.55034	8.16392
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.23988	1.97522	23.12060
	B->CO (FF)	0.21281	1.87383	22.41540
	CI->CO (FF)	0.20954	1.96971	23.64860
	CON->CO (RF)	0.02499	0.56768	7.68189

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)	0.19875	1.03841	10.43550
	B->CON (FR)	0.17175	0.97846	10.37420
	CI->CON (FR)	0.16848	1.03438	10.99270
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.18825	1.02884	10.43720
	B->CON (FR)	0.16231	0.96977	10.37620
	CI->CON (FR)	0.15796	1.02491	10.99460

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)	0.10153	0.57736	5.95291
	B->CON (RF)	0.10036	0.60395	6.47454
	CI->CON (RF)	0.09212	0.61487	6.74523
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.09804	0.57422	5.95539
	B->CON (RF)	0.09699	0.60104	6.47748
	CI->CON (RF)	0.08861	0.61171	6.74830

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)	0.36040	2.09680	23.99530
	B->S (-R)	0.36855	2.08794	23.40760
	CI->S (-R)	0.32787	2.08677	24.51100
	CON->S (RR)	0.09296	0.68820	6.99284
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.34705	2.08638	23.98660
	B->S (-R)	0.35517	2.07793	23.39860
	CI->S (-R)	0.31446	2.07639	24.50020
	CON->S (RR)	0.09300	0.68819	6.99256

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)	0.27988	1.48239	15.75420
	B->S (-F)	0.27852	1.44370	15.73330
	CI->S (-F)	0.27007	1.51500	16.49410
	CON->S (FF)	0.11638	0.66913	6.16773
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.27267	1.47811	15.74920
	B->S (-F)	0.27152	1.43997	15.72900
	CI->S (-F)	0.26280	1.50988	16.48950
	CON->S (FF)	0.11641	0.66907	6.16740

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	0.00258	0.00303	0.01229
	B	0.00376	0.00410	0.01244
	CI	0.00384	0.00439	0.01384
sky130_osu_sc_12T_ls__addf_l	A	0.00226	0.00257	0.00921
	B	0.00344	0.00364	0.00978
	CI	0.00352	0.00393	0.01053

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00952	0.01063	0.03046
	B	0.00994	0.01090	0.02870
	CI	0.00803	0.00923	0.02926
sky130_osu_sc_12T_ls__addf_l	A	0.00925	0.00999	0.02262
	B	0.00966	0.01033	0.02156
	CI	0.00776	0.00855	0.02159

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00950	0.01008	0.01933
	B	0.00993	0.01040	0.01878
	CI	0.00802	0.00865	0.01827
sky130_osu_sc_12T_ls__addf_l	A	0.00924	0.00975	0.01847
	B	0.00966	0.01013	0.01795
	CI	0.00776	0.00832	0.01743

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00301	0.00302	0.00765
	B	0.00373	0.00387	0.00914
	CI	0.00383	0.00417	0.00975
sky130_osu_sc_12T_ls__addf_l	A	0.00271	0.00269	0.00717
	B	0.00342	0.00354	0.00860
	CI	0.00352	0.00384	0.00920

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00952	0.01054	0.02824
	B	0.00995	0.01083	0.02671
	CI	0.00803	0.00910	0.02706
sky130_osu_sc_12T_ls__addf_l	A	0.00925	0.01018	0.02676
	B	0.00968	0.01047	0.02533
	CI	0.00776	0.00874	0.02554

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.02068	0.02073	0.03623
	B	0.01898	0.01883	0.03533
	CI	0.01720	0.01691	0.03165
sky130_osu_sc_12T_ls__addf_l	A	0.02068	0.02073	0.03623
	B	0.01894	0.01883	0.03533
	CI	0.01718	0.01691	0.03166

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00568	0.00599	1.08440	1.11146	1.13031
sky130_osu_sc_12T_ls__addh_l	0.00568	0.00599	0.75050	1.11400	0.76444

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.09055	0.09162
sky130_osu_sc_12T_ls__addh_l	0.00000	0.08013	0.08119

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)	0.11260	0.69963	6.97873
	B->CO (RR)	0.11583	0.68663	6.97912
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.11399	0.76118	6.95950
	B->CO (RR)	0.11739	0.75068	6.94800

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)	0.09767	0.64423	6.39859
	B->CO (FF)	0.10308	0.65971	6.47945
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.09581	0.66003	6.08442
	B->CO (FF)	0.10105	0.67624	6.17177

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)	0.16080	0.72617	6.96631
	B->CON (RR)	0.16359	0.71163	6.96855
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.14841	0.70791	6.94917
	B->CON (RR)	0.15128	0.69554	6.94063

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)	0.13145	0.66970	6.49343
	B->CON (FF)	0.12941	0.67842	6.56257
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.12194	0.64799	6.39435
	B->CON (FF)	0.12003	0.65789	6.46133

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)	0.18333	1.43097	17.35390
	B->S (FR)	0.18113	1.44105	17.45790
	CON->S (FR)	0.03093	0.77514	11.53820
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.17817	1.36674	14.40860
	B->S (FR)	0.17597	1.37503	14.49150
	CON->S (FR)	0.03591	0.84729	11.43430

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)	0.20039	1.34852	15.84360
	B->S (RF)	0.20315	1.33265	15.84620
	CON->S (RF)	0.02213	0.54997	8.21595
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.19005	1.20903	12.00230
	B->S (RF)	0.19290	1.19630	11.99690
	CON->S (RF)	0.02446	0.56922	7.74887

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	0.00477	0.00484	0.01218
	B	0.00000	0.00000	0.00000
	B	0.00431	0.00428	0.01217
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00419	0.00421	0.01166
	B	0.00000	0.00000	0.00000
	B	0.00374	0.00364	0.01135

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	0.00676	0.00674	0.01451
	B	0.00000	0.00000	0.00000
	B	0.00708	0.00737	0.01531
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00617	0.00614	0.01387
	B	0.00000	0.00000	0.00000
	B	0.00650	0.00677	0.01458

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	0.00477	0.00485	0.01220
	B	0.00000	0.00000	0.00000
	B	0.00431	0.00428	0.01218
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00420	0.00421	0.01171
	B	0.00000	0.00000	0.00000
	B	0.00373	0.00364	0.01141

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	0.00676	0.00674	0.01445
	B	0.00000	0.00000	0.00000
	B	0.00708	0.00737	0.01528
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00617	0.00613	0.01388
	B	0.00000	0.00000	0.00000
	B	0.00650	0.00677	0.01453

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	0.00676	0.00674	0.01449
	B	0.00000	0.00000	0.00000
	B	0.00709	0.00737	0.01531
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00618	0.00615	0.01396
	B	0.00000	0.00000	0.00000
	B	0.00650	0.00678	0.01459

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	0.00477	0.00485	0.01230
	B	0.00000	0.00000	0.00000
	B	0.00432	0.00428	0.01226
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00419	0.00421	0.01166
	B	0.00000	0.00000	0.00000
	B	0.00374	0.00365	0.01134

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)	1.19744	1.14423	0.35897
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.19753	1.14433	0.35907

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)	1.19752	1.14540	0.38967
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.19761	1.14550	0.38977

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00304	0.00315	1.09343
sky130_osu_sc_12T_ls__and2_2	0.00304	0.00316	2.17180
sky130_osu_sc_12T_ls__and2_4	0.00304	0.00316	4.20418
sky130_osu_sc_12T_ls__and2_6	0.00307	0.00315	6.22951
sky130_osu_sc_12T_ls__and2_8	0.00304	0.00316	8.16137
sky130_osu_sc_12T_ls__and2_l	0.00230	0.00238	0.75624

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.03638	0.04914
sky130_osu_sc_12T_ls__and2_2	0.00000	0.04895	0.07034
sky130_osu_sc_12T_ls__and2_4	0.00000	0.07924	0.11528
sky130_osu_sc_12T_ls__and2_6	0.00000	0.10953	0.16022
sky130_osu_sc_12T_ls__and2_8	0.00000	0.13982	0.20516
sky130_osu_sc_12T_ls__and2_l	0.00000	0.02997	0.04218

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)	0.08617	0.63475	6.84608
	B->Y (RR)	0.09140	0.63032	6.74113
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.09657	0.57079	6.91901
	B->Y (RR)	0.10179	0.55972	6.80723
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.13114	0.57917	7.14428
	B->Y (RR)	0.13635	0.55902	7.02733
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.16639	0.61593	7.37336
	B->Y (RR)	0.17147	0.58978	7.23918
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.20067	0.65556	7.55831
	B->Y (RR)	0.20586	0.62728	7.41326
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.09234	0.70439	6.79038
	B->Y (RR)	0.09742	0.69734	6.67204

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)**	0.07735	0.57422	5.94525
	B->Y (FF)	0.08012	0.58693	6.00233
sky130_osu_sc_12T_ls__and2_2	**A->Y (FF)**	0.08946	0.55348	6.09645
	B->Y (FF)	0.09167	0.56144	6.15707
sky130_osu_sc_12T_ls__and2_4	**A->Y (FF)**	0.12546	0.58665	6.36710
	B->Y (FF)	0.12532	0.58862	6.42377
sky130_osu_sc_12T_ls__and2_6	**A->Y (FF)**	0.16384	0.63319	6.61289
	B->Y (FF)	0.16109	0.63011	6.64541
sky130_osu_sc_12T_ls__and2_8	**A->Y (FF)**	0.20009	0.67438	6.76348
	B->Y (FF)	0.19515	0.66821	6.78619
sky130_osu_sc_12T_ls__and2_l	**A->Y (FF)**	0.07884	0.60385	5.75359
	B->Y (FF)	0.08529	0.62290	5.84193

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	0.00328	0.00372	0.02788
	B	0.00000	0.00000	0.00000
	B	0.00334	0.00333	0.02134
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00627	0.00684	0.03038
	B	0.00000	0.00000	0.00000
	B	0.00634	0.00652	0.02426
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01319	0.01404	0.03694
	B	0.00000	0.00000	0.00000
	B	0.01325	0.01372	0.03099
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02068	0.02119	0.04341
	B	0.00000	0.00000	0.00000
	B	0.02084	0.02102	0.03885
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02873	0.02837	0.04946
	B	0.00000	0.00000	0.00000
	B	0.02879	0.02820	0.04644
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00251	0.00294	0.02418
	B	0.00000	0.00000	0.00000
	B	0.00256	0.00265	0.01849

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	0.00836	0.00933	0.03020
	B	0.00000	0.00000	0.00000
	B	0.00947	0.01019	0.03010
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01062	0.01184	0.03253
	B	0.00000	0.00000	0.00000
	B	0.01177	0.01267	0.03259
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01659	0.01805	0.03844
	B	0.00000	0.00000	0.00000
	B	0.01768	0.01883	0.03855
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02332	0.02450	0.04485
	B	0.00000	0.00000	0.00000
	B	0.02423	0.02528	0.04482
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03070	0.03067	0.05119
	B	0.00000	0.00000	0.00000
	B	0.03144	0.03147	0.05087
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00629	0.00706	0.02500
	B	0.00000	0.00000	0.00000
	B	0.00708	0.00772	0.02495

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)	-0.00294	-0.00295	-0.00297
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00294	-0.00295	-0.00297
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00294	-0.00295	-0.00297
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00297	-0.00297	-0.00300
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00294	-0.00296	-0.00297
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00206	-0.00208	-0.00208

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)	0.00297	0.00301	0.00298
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00297	0.00301	0.00298
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00297	0.00300	0.00298
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00300	0.00303	0.00301
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00297	0.00300	0.00298
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00207	0.00210	0.00209

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)	-0.00282	-0.00283	-0.00282
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00282	-0.00282	-0.00282
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00282	-0.00283	-0.00282
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00282	-0.00283	-0.00282
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00282	-0.00283	-0.00282
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00198	-0.00198	-0.00198

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)	0.00290	0.00285	0.00283
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00290	0.00285	0.00283
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00290	0.00285	0.00283
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00290	0.00285	0.00283
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00290	0.00285	0.00283
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00204	0.00200	0.00199

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00280	0.00298	0.00293	0.48051

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.01960	0.03358

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)	0.10141	0.95396	10.32250
	A1->Y (FR)	0.08172	0.87615	9.76915
	B0->Y (FR)	0.07622	0.95842	10.98550

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)	0.05278	0.51406	5.66669
	A1->Y (RF)	0.04879	0.54267	6.26075
	B0->Y (RF)	0.03068	0.49320	5.84419

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	0.00727	0.00718	0.01088
	A1	0.00000	0.00000	0.00000
	A1	0.00614	0.00603	0.00967
	B0	0.00440	0.00465	0.00978

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	0.00150	0.00132	0.00516
	A1	0.00000	0.00000	0.00000
	A1	0.00154	0.00149	0.00600
	B0	-0.00060	-0.00032	0.00422

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)	-0.00217	-0.00245	-0.00244
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00248	-0.00250	-0.00249
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00249	-0.00250	-0.00249

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)	0.00243	0.00245	0.00244
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00248	0.00251	0.00249
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00257	0.00251	0.00250

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)	-0.00217	-0.00247	-0.00244
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00248	-0.00250	-0.00249
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00271	-0.00273	-0.00274

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)	0.00243	0.00247	0.00244
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00248	0.00252	0.00250
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00273	0.00279	0.00274

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)	-0.00104	-0.00106	-0.00105

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)	0.00115	0.00116	0.00107

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00280	0.00297	0.00310	0.00292	0.47135

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.02754	0.04530

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)	0.12965	0.98178	10.25890
	A1->Y (FR)	0.11587	0.96287	10.20370
	B0->Y (FR)	0.08109	0.95340	10.86220
	B1->Y (FR)	0.09539	0.96825	10.93120

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)	0.07012	0.53057	5.62064
	A1->Y (RF)	0.06599	0.56059	6.21176
	B0->Y (RF)	0.03682	0.52992	6.16813
	B1->Y (RF)	0.04072	0.49361	5.58034

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	0.00892	0.00882	0.01250
	A1	0.00779	0.00765	0.01125
	B0	0.00480	0.00495	0.01036
	B1	0.00598	0.00601	0.01120

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00304	0.00285	0.00686
	A1	0.00306	0.00304	0.00768
	B0	-0.00035	-0.00022	0.00452
	B1	-0.00029	-0.00028	0.00369

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)	-0.00219	-0.00245	-0.00244
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00248	-0.00250	-0.00249
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00248	-0.00249	-0.00249
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00248	-0.00249	-0.00249

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)	0.00243	0.00245	0.00244
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00248	0.00251	0.00249
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00257	0.00251	0.00249
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00257	0.00251	0.00249

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)	-0.00218	-0.00246	-0.00244
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00248	-0.00251	-0.00249
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00270	-0.00272	-0.00273
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00270	-0.00272	-0.00273

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)	0.00244	0.00246	0.00244
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00248	0.00251	0.00250
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00272	0.00278	0.00274
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00272	0.00278	0.00274

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)	-0.00104	-0.00105	-0.00104
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00103	-0.00104	-0.00104
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00282	-0.00284	-0.00284
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00282	-0.00284	-0.00284

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)	0.00121	0.00121	0.00108
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00103	0.00104	0.00104
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00284	0.00285	0.00285
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00284	0.00285	0.00285

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)	-0.00106	-0.00107	-0.00106
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00105	-0.00106	-0.00105
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00261	-0.00262	-0.00261
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00261	-0.00262	-0.00261

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)	0.00122	0.00122	0.00110
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00105	0.00106	0.00105
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00269	0.00264	0.00262
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00269	0.00264	0.00262

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00316	1.02914
sky130_osu_sc_12T_ls__buf_2	0.00316	2.12056
sky130_osu_sc_12T_ls__buf_4	0.00315	4.16084
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00316	8.20207
sky130_osu_sc_12T_ls__buf_l	0.00234	0.75643

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.03945	0.03945
sky130_osu_sc_12T_ls__buf_2	0.00000	0.05490	0.06065
sky130_osu_sc_12T_ls__buf_4	0.00000	0.09007	0.10559
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.16041	0.19546
sky130_osu_sc_12T_ls__buf_l	0.00000	0.02903	0.02903

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)**	0.06554	0.60724	6.59946
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.06929	0.52241	6.66844
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.09197	0.50905	6.84376
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.13713	0.55697	7.24168
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.06977	0.66099	6.52316

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)**	0.07247	0.55435	5.70606
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.08490	0.54250	6.03641
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.12082	0.57865	6.35105
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.19476	0.66829	6.80981
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.07610	0.59870	5.80658

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	0.00311	0.00355	0.02229
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00604	0.00663	0.02552
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01278	0.01373	0.03280
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02694	0.02804	0.04833
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00240	0.00289	0.02138

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	0.00806	0.00888	0.02932
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01029	0.01125	0.03145
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01625	0.01729	0.03712
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03025	0.02983	0.04899
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00618	0.00703	0.02547

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
	-0.00068	-0.00068	-0.00065

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
	0.00068	0.00068	0.00065

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00292	0.00291	0.00899	1.08262	1.08177
sky130_osu_sc_12T_ls__dffr_l	0.00292	0.00291	0.00898	0.76032	0.75536

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.15368	0.17494
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.14326	0.16452

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)	0.34947	1.43558	14.56960
	QN->Q (FR)	0.03340	0.83571	12.29340
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.34313	1.54225	14.25490
	QN->Q (FR)	0.03768	0.89506	12.03760

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)	0.34256	1.44585	15.10180
	QN->Q (RF)	0.02429	0.58894	8.68082
	RN->Q (FF)	0.25328	1.48345	16.81260
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.34834	1.58142	14.87730
	QN->Q (RF)	0.02616	0.60363	8.20174
	RN->Q (FF)	0.26015	1.61864	16.57950

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)	0.30744	0.86106	6.84339
	RN->QN (FR)	0.21799	0.89871	8.54989
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.30892	0.93165	6.86804
	RN->QN (FR)	0.21982	0.96902	8.56850

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)**	0.29757	0.71906	4.47453
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.28571	0.72884	4.24876

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)	-0.07633	-0.08540	-0.00348
	setup	CK (R)	0.27028	0.28861	2.17228
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.07676	-0.08634	-0.00343
	setup	CK (R)	0.27141	0.28943	1.80537

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)	-0.14245	-0.34998	0.11132
	setup	CK (R)	0.17097	0.35921	3.79937
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.14292	-0.34819	-0.78072
	setup	CK (R)	0.17097	0.35921	3.79792

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)	-0.07633	-0.08540	-0.00348
	setup	CK (R)	0.27028	0.28861	2.17228
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.07676	-0.08634	-0.00343
	setup	CK (R)	0.27141	0.28943	1.80537

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)	-0.14245	-0.34998	0.11132
	setup	CK (R)	0.17097	0.35921	3.79937
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.14292	-0.34819	-0.78072
	setup	CK (R)	0.17097	0.35921	3.79792

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)	0.23005	0.25753	2.25547
	removal	CK (R)	-0.05651	-0.06578	-0.11480
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.23158	0.25761	2.00597
	removal	CK (R)	-0.05651	-0.06578	-0.11480

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)	0.23005	0.25753	2.25547
	removal	CK (R)	-0.05651	-0.06578	-0.11480
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.23158	0.25761	2.00597
	removal	CK (R)	-0.05651	-0.06578	-0.11480

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 ()	0.15324	0.43701	13.33370
	min_pulse_width	RN ()	0.15324	0.43701	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.15324	0.43701	13.33370
	min_pulse_width	RN ()	0.14994	0.43701	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 ()	0.16643	0.43701	13.33370
	min_pulse_width	CK ()	0.17633	0.43701	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.15654	0.43701	13.33370
	min_pulse_width	CK ()	0.17303	0.43701	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 ()	0.35122	0.43701	13.33370
	min_pulse_width	CK ()	0.14004	0.43701	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.35122	0.43701	13.35330
	min_pulse_width	CK ()	0.14004	0.43701	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	0.00826	0.00748	0.01292
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00737	0.00693	0.01954

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	0.00957	0.00864	0.00829
	RN	-0.00105	-0.05949	-0.87692
	RN	0.02147	0.02083	0.02039
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00869	0.00816	0.01535
	RN	-0.00105	-0.04812	-0.61586
	RN	0.02058	0.02035	0.02738

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	0.00957	0.00863	0.00827
	RN	-0.00105	-0.05946	-0.87623
	RN	0.02147	0.02083	0.02032
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00869	0.00815	0.01529
	RN	-0.00105	-0.04793	-0.61184
	RN	0.02058	0.02035	0.02733

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	0.00823	0.00745	0.01242
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00734	0.00690	0.01948

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	-0.00209	-0.00247	-0.00247
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01028	0.01007	0.02884
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00419	0.00408	0.02287
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00209	-0.00247	-0.00247
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01028	0.01007	0.02884
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00419	0.00408	0.02287

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	0.00245	0.00249	0.00247
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01598	0.01588	0.03515
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00783	0.00777	0.02639
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00245	0.00249	0.00247
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01598	0.01588	0.03515
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00783	0.00777	0.02639

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)	0.00312	0.00339	0.02923
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00944	0.00947	0.03579
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)	0.00312	0.00339	0.02923
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00944	0.00947	0.03579

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)	0.00806	0.00884	0.03396
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01626	0.01655	0.04213
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)	0.00806	0.00884	0.03396
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01626	0.01655	0.04213

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)	-0.00063	-0.00058	0.02541
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00521	0.00479	0.03144
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00067	-0.00043	0.02534
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00063	-0.00058	0.02541
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00521	0.00479	0.03144
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00067	-0.00043	0.02534

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)	0.01225	0.01270	0.03841
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02580	0.02566	0.05540
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01940	0.01964	0.04529
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02510	0.02588	0.06891
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01365	0.01398	0.03912
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01225	0.01270	0.03841
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02580	0.02566	0.05540
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01940	0.01964	0.04529
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02509	0.02589	0.06891
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01365	0.01398	0.03912

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00288	0.00292	0.00675	0.00905	1.12616	1.12780
sky130_osu_sc_12T_ls__dffsr_l	0.00288	0.00292	0.00675	0.00905	0.75410	0.75566

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.16207	0.18507
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.15165	0.17466

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)	0.36598	1.46912	14.94930
	QN->Q (FR)	0.03157	0.81155	12.07210
	RN->Q (RR)	0.29201	1.40590	14.98160
	SN->Q (FR)	0.27370	1.48874	16.78260
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.36566	1.56846	14.17800
	QN->Q (FR)	0.03760	0.89170	11.96930
	RN->Q (RR)	0.29296	1.50754	14.20320
	SN->Q (FR)	0.27375	1.58753	15.98350

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)	0.39849	1.51559	15.48750
	QN->Q (RF)	0.02412	0.59629	8.87058
	RN->Q (FF)	0.26723	1.51245	17.18710
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.40674	1.64190	14.82770
	QN->Q (RF)	0.02602	0.60125	8.15785
	RN->Q (FF)	0.27562	1.63871	16.52400

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)	0.36273	0.92261	6.97910
	RN->QN (FR)	0.23201	0.91931	8.67768
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.36674	0.99803	6.94726
	RN->QN (FR)	0.23657	0.99457	8.64031

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)	0.31646	0.75264	4.69804
	RN->QN (RF)	0.24380	0.69176	4.72842
	SN->QN (FF)	0.22486	0.77362	6.51455
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.30956	0.76120	4.29169
	RN->QN (RF)	0.23709	0.70121	4.31862
	SN->QN (FF)	0.21816	0.78077	6.09140

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)	-0.08466	-0.09698	-0.07095
	setup	CK (R)	0.27553	0.29120	1.59887
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.08456	-0.09770	-0.07214
	setup	CK (R)	0.27509	0.29117	1.61589

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)	-0.16389	-0.37205	-1.11839
	setup	CK (R)	0.20158	0.38151	3.86984
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.16526	-0.36986	-0.86683
	setup	CK (R)	0.20050	0.38151	3.86984

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)	-0.08466	-0.09698	-0.07095
	setup	CK (R)	0.27553	0.29120	1.59887
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.08456	-0.09770	-0.07214
	setup	CK (R)	0.27509	0.29117	1.61589

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)	-0.16389	-0.37205	-1.11839
	setup	CK (R)	0.20158	0.38151	3.86984
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.16526	-0.36986	-0.86683
	setup	CK (R)	0.20050	0.38151	3.86984

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)	0.21108	0.23106	1.42261
	removal	CK (R)	-0.03389	-0.03946	-0.07081
	hold	SN (R)	-0.21499	-0.35344	-1.42700
	setup	SN (R)	0.24413	0.38732	7.14933
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.21054	0.23127	1.42728
	removal	CK (R)	-0.03389	-0.03946	-0.07081
	hold	SN (R)	-0.20749	-0.34474	-1.38095
	setup	SN (R)	0.24152	0.37831	7.14336

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)	0.21108	0.23106	1.42261
	removal	CK (R)	-0.03389	-0.03946	-0.07081
	hold	SN (R)	-0.21499	-0.35344	-1.42700
	hold	SN (R)	-0.21651	-0.35561	-1.43958
	setup	SN (R)	0.24413	0.38604	7.13712
	setup	SN (R)	0.24407	0.38732	7.14933
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.21054	0.23127	1.42728
	removal	CK (R)	-0.03389	-0.03946	-0.07081
	hold	SN (R)	-0.20749	-0.34474	-1.38095
	hold	SN (R)	-0.20825	-0.34691	-1.39249
	setup	SN (R)	0.24152	0.37517	7.14332
	setup	SN (R)	0.23030	0.37831	7.14336

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 ()	0.17963	0.43701	13.33370
	min_pulse_width	RN ()	0.18623	0.43701	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.17963	0.43701	13.33370
	min_pulse_width	RN ()	0.17963	0.43701	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)	0.04567	0.07909	6.61833
	removal	CK (R)	-0.02039	-0.06112	-0.33457
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04499	0.07866	6.40862
	removal	CK (R)	-0.02321	-0.06112	-0.33457

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)	0.04567	0.07909	6.61833
	removal	CK (R)	-0.02039	-0.06112	-0.33457
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04499	0.07866	6.40862
	removal	CK (R)	-0.02321	-0.06112	-0.33457

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 ()	0.21923	0.43701	13.33370
	min_pulse_width	SN ()	0.22583	0.43701	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.21923	0.43701	13.33370
	min_pulse_width	SN ()	0.21263	0.43701	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 ()	0.16643	0.43701	13.33370
	min_pulse_width	CK ()	0.20273	0.43701	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.15984	0.43701	13.33370
	min_pulse_width	CK ()	0.19943	0.43701	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 ()	0.35631	0.43924	13.33370
	min_pulse_width	CK ()	0.17303	0.43701	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.35782	0.43701	13.33370
	min_pulse_width	CK ()	0.17303	0.43701	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	0.01038	0.00958	0.01273
	RN	0.01879	0.01787	0.01392
	SN	-0.00105	-0.06091	-0.91219
	SN	0.02116	0.01978	0.01801
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00954	0.00911	0.02190
	RN	0.01795	0.01740	0.02277
	SN	-0.00105	-0.04788	-0.61082
	SN	0.02032	0.01930	0.02566

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	0.01107	0.01053	0.01397
	RN	-0.00105	-0.06091	-0.91219
	RN	0.02259	0.02221	0.02588
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01020	0.00977	0.01706
	RN	-0.00105	-0.04788	-0.61082
	RN	0.02172	0.02146	0.02887

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	0.01107	0.01052	0.01382
	RN	-0.00105	-0.06096	-0.91351
	RN	0.02259	0.02221	0.02568
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01020	0.00977	0.01692
	RN	-0.00105	-0.04794	-0.61209
	RN	0.02172	0.02146	0.02880

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	0.01034	0.00956	0.01380
	RN	0.01875	0.01783	0.01517
	SN	-0.00105	-0.06096	-0.91345
	SN	0.02112	0.01975	0.01791
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00951	0.00909	0.02130
	RN	0.01791	0.01735	0.02268
	SN	-0.00105	-0.04794	-0.61205
	SN	0.02028	0.01928	0.02559

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	-0.00244	-0.00248	-0.00248
	(!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)	0.01310	0.01291	0.03153
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00466	0.00453	0.02317
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00460	0.00450	0.02312
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00466	0.00455	0.02319
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00244	-0.00248	-0.00248
	(!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)	0.01310	0.01291	0.03153
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00466	0.00453	0.02317
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00460	0.00450	0.02312
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00466	0.00455	0.02319

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	0.00255	0.00248	0.00248
	(!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)	0.01845	0.01829	0.03687
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00856	0.00853	0.02695
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00861	0.00855	0.02695
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00853	0.00850	0.02691
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00255	0.00248	0.00248
	(!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)	0.01845	0.01829	0.03687
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00856	0.00853	0.02695
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00861	0.00855	0.02694
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00853	0.00850	0.02691

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)	0.00235	0.00259	0.02830
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01111	0.01111	0.03720
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)	0.00235	0.00259	0.02830
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01111	0.01111	0.03720

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)	0.00883	0.00965	0.03493
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01731	0.01757	0.04328
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)	0.00883	0.00965	0.03493
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01731	0.01757	0.04328

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)	-0.00622	-0.00625	-0.00626
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00617	-0.00675	-0.00671
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00600	-0.00629	-0.00627
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00315	0.00309	0.02255
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)	-0.00622	-0.00625	-0.00626
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00617	-0.00675	-0.00671
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00600	-0.00629	-0.00627
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00315	0.00309	0.02255

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)	0.00626	0.00639	0.00628
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00667	0.00676	0.00671
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00624	0.00629	0.00628
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01412	0.01381	0.03159
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)	0.00626	0.00639	0.00628
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00667	0.00676	0.00671
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00624	0.00630	0.00628
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01412	0.01381	0.03159

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)	-0.00070	-0.00067	0.02528
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00615	0.00575	0.03232
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00608	0.00569	0.03230
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00052	-0.00042	0.02545
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00307	0.00328	0.05125
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00070	-0.00067	0.02528
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00615	0.00575	0.03231
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00608	0.00569	0.03230
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00052	-0.00042	0.02545
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00307	0.00328	0.05125

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)	0.02891	0.02879	0.05836
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01247	0.01289	0.03859
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01974	0.02005	0.04560
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01980	0.02010	0.04572
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02763	0.02821	0.07124
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01366	0.01397	0.03910
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01692	0.01771	0.06498
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02891	0.02879	0.05836
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01247	0.01289	0.03859
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01973	0.02005	0.04560
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01980	0.02008	0.04572
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02763	0.02820	0.07124
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01366	0.01397	0.03910
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01692	0.01771	0.06498

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00290	0.00549	0.00894	1.08443	1.08697
sky130_osu_sc_12T_ls__dffs_l	0.00290	0.00549	0.00894	0.75624	0.75686

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.13241	0.18270
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.12199	0.17228

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)	0.26207	1.33087	14.46210
	QN->Q (FR)	0.03338	0.83344	12.26520
	SN->Q (FR)	0.20239	1.43607	16.41280
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.26267	1.44365	14.06540
	QN->Q (FR)	0.03765	0.89106	11.96920
	SN->Q (FR)	0.20344	1.54401	15.98370

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)	0.38141	1.49260	15.14560
	QN->Q (RF)	0.02420	0.58675	8.66562
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.38550	1.61957	14.82330
	QN->Q (RF)	0.02608	0.60079	8.16061

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)	0.34512	0.90794	6.90548
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.34509	0.97451	6.91275

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)	0.21586	0.61718	4.38141
	SN->QN (FF)	0.15568	0.72301	6.33303
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.21063	0.63636	4.15178
	SN->QN (FF)	0.15068	0.73733	6.07142

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)	-0.06004	-0.07160	-0.00072
	setup	CK (R)	0.18805	0.21832	1.39935
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.06045	-0.07171	-0.00226
	setup	CK (R)	0.18823	0.21813	1.36058

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)	-0.14518	-0.35091	-2.56431
	setup	CK (R)	0.18310	0.36359	3.81930
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.14866	-0.34900	-2.66191
	setup	CK (R)	0.18297	0.36358	3.81930

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)	-0.06004	-0.07160	-0.00072
	setup	CK (R)	0.18805	0.21832	1.39935
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.06045	-0.07171	-0.00226
	setup	CK (R)	0.18823	0.21813	1.36058

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)	-0.14518	-0.35091	-2.56431
	setup	CK (R)	0.18310	0.36359	3.81930
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.14866	-0.34900	-2.66191
	setup	CK (R)	0.18297	0.36358	3.81930

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)	0.04819	0.07616	5.56060
	removal	CK (R)	-0.02668	-0.05420	-0.27731
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04814	0.07595	5.53934
	removal	CK (R)	-0.02668	-0.05420	-0.27731

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)	0.04819	0.07616	5.56060
	removal	CK (R)	-0.02668	-0.05420	-0.27731
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04814	0.07595	5.53934
	removal	CK (R)	-0.02668	-0.05420	-0.27731

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 ()	0.14004	0.43701	13.33370
	min_pulse_width	SN ()	0.14664	0.43701	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.14004	0.43701	13.33370
	min_pulse_width	SN ()	0.13674	0.43701	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 ()	0.11364	0.43701	13.33370
	min_pulse_width	CK ()	0.18953	0.43701	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.11034	0.43701	13.33370
	min_pulse_width	CK ()	0.18293	0.43701	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 ()	0.26873	0.43701	13.33370
	min_pulse_width	CK ()	0.15984	0.43701	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.26873	0.43701	13.33370
	min_pulse_width	CK ()	0.15984	0.43701	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	0.00823	0.00751	0.01289
	SN	-0.00105	-0.05954	-0.87839
	SN	0.01771	0.01685	0.01730
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00735	0.00698	0.02001
	SN	-0.00105	-0.04796	-0.61256
	SN	0.01683	0.01630	0.02382

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	0.00950	0.00864	0.00871
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00863	0.00815	0.01553

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	0.00950	0.00864	0.00854
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00863	0.00816	0.01543

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	0.00820	0.00750	0.01275
	SN	-0.00105	-0.05963	-0.88037
	SN	0.01768	0.01682	0.01759
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00733	0.00697	0.01941
	SN	-0.00105	-0.04799	-0.61302
	SN	0.01680	0.01628	0.02423

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	-0.00248	-0.00252	-0.00251
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00992	0.00972	0.02883
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00418	0.00406	0.02284
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00248	-0.00252	-0.00251
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00992	0.00972	0.02883
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00418	0.00406	0.02284

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	0.00259	0.00252	0.00251
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01579	0.01562	0.03450
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00792	0.00789	0.02653
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00259	0.00252	0.00251
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01578	0.01562	0.03451
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00792	0.00789	0.02653

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)	-0.00455	-0.00455	-0.00456
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00312	0.00309	0.02154
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)	-0.00455	-0.00455	-0.00456
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00312	0.00308	0.02154

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)	0.00461	0.00460	0.00458
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00966	0.00965	0.02810
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)	0.00461	0.00460	0.00458
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00966	0.00965	0.02810

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)	-0.00063	-0.00058	0.02539
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00059	-0.00035	0.02543
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00267	0.00291	0.05120
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00063	-0.00058	0.02539
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00059	-0.00035	0.02543
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00267	0.00291	0.05120

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)	0.02555	0.02547	0.05567
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01226	0.01269	0.03843
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02474	0.02531	0.06838
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01358	0.01391	0.03906
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01603	0.01689	0.06454
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02555	0.02547	0.05567
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01226	0.01267	0.03843
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02474	0.02531	0.06838
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01358	0.01391	0.03906
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01603	0.01689	0.06454

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00305	0.00885	1.00326
sky130_osu_sc_12T_ls__dff_l	0.00305	0.00884	0.70933

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.14345	0.16005
sky130_osu_sc_12T_ls__dff_l	0.00000	0.13303	0.14963

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)	0.22057	0.77925	6.70699
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.22054	0.84263	6.64975

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)	0.32090	0.70571	4.19148
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.32338	0.73813	4.05550

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)	-0.05227	-0.06795	-0.00695
	setup	CK (R)	0.15068	0.18693	1.23267
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.05371	-0.06811	-0.00970
	setup	CK (R)	0.15258	0.18698	1.21050

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)	-0.13749	-0.35067	-3.19381
	setup	CK (R)	0.15992	0.36241	3.94626
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.13452	-0.35034	-3.22311
	setup	CK (R)	0.15986	0.36241	3.92001

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 ()	0.09714	0.43701	13.33370
	min_pulse_width	CK ()	0.16973	0.43701	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.09384	0.43701	13.33370
	min_pulse_width	CK ()	0.16643	0.43701	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 ()**	0.23243	0.43701	13.33370
	min_pulse_width	**CK ()**	0.13014	0.43701	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.22913	0.43701	13.33370
	min_pulse_width	**CK ()**	0.13014	0.43701	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	0.01732	0.01756	0.05895
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01554	0.01580	0.05728

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	0.01939	0.01913	0.04579
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01766	0.01741	0.04411

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	-0.00208	-0.00245	-0.00245
	!CK	0.00000	0.00000	0.00000
	!CK	0.00906	0.00890	0.02793
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00208	-0.00245	-0.00245
	!CK	0.00000	0.00000	0.00000
	!CK	0.00906	0.00890	0.02793

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	0.00244	0.00245	0.00245
	!CK	0.00000	0.00000	0.00000
	!CK	0.01634	0.01619	0.03568
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00244	0.00245	0.00245
	!CK	0.00000	0.00000	0.00000
	!CK	0.01634	0.01619	0.03568

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)	-0.00067	-0.00061	0.02537
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00059	-0.00034	0.02546
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00067	-0.00061	0.02537
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00059	-0.00034	0.02546

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)	0.01222	0.01264	0.03842
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02467	0.02463	0.05518
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02512	0.02574	0.06954
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01350	0.01379	0.03900
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01222	0.01265	0.03842
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02467	0.02463	0.05517
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02512	0.02577	0.06954
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01350	0.01379	0.03900

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00295	0.99123
sky130_osu_sc_12T_ls__inv_10	0.02648	9.96581
sky130_osu_sc_12T_ls__inv_2	0.00549	2.04979
sky130_osu_sc_12T_ls__inv_3	0.00813	3.02784
sky130_osu_sc_12T_ls__inv_4	0.01072	4.07852
sky130_osu_sc_12T_ls__inv_6	0.01604	6.06515
sky130_osu_sc_12T_ls__inv_8	0.02126	8.04005
sky130_osu_sc_12T_ls__inv_l	0.00230	0.68769

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.01972	0.02373
sky130_osu_sc_12T_ls__inv_10	0.00000	0.17586	0.22469
sky130_osu_sc_12T_ls__inv_2	0.00000	0.03517	0.04494
sky130_osu_sc_12T_ls__inv_3	0.00000	0.05490	0.06867
sky130_osu_sc_12T_ls__inv_4	0.00000	0.07034	0.08987
sky130_osu_sc_12T_ls__inv_6	0.00000	0.10552	0.13481
sky130_osu_sc_12T_ls__inv_8	0.00000	0.14069	0.17975
sky130_osu_sc_12T_ls__inv_l	0.00000	0.01451	0.01750

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)**	0.03237	0.77365	11.12660
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.03503	0.49945	11.12390
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.02378	0.65208	11.09200
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.02527	0.60504	11.15010
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.02469	0.57177	11.11560
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.02702	0.53343	11.10090
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.03070	0.51299	11.09810
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.03781	0.83897	11.01900

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)**	0.02250	0.52483	7.57999
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02764	0.33126	7.84973
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01771	0.45414	7.75047
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01891	0.42372	7.85223
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01849	0.39579	7.86215
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02154	0.36465	7.87485
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02454	0.34525	7.87653
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02511	0.54287	7.23901

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	0.00414	0.00450	0.00762
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03396	0.03986	0.07016
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00714	0.00792	0.01398
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01096	0.01175	0.02157
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01396	0.01589	0.02796
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02068	0.02439	0.04163
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02733	0.03178	0.05556
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00322	0.00349	0.00718

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	-0.00072	-0.00042	0.00311
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01237	-0.00836	0.02746
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00236	-0.00173	0.00537
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00312	-0.00224	0.00848
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00480	-0.00345	0.01073
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00734	-0.00505	0.01623
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00994	-0.00668	0.02175
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00052	-0.00028	0.00262

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.27322	0.27323	0.00606	0.27757

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.04636	0.04636

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)	-	0.01409	0.25403	2.46784
	A1->Y (RR)	-	0.01658	0.25749	2.47952
	S0->Y (RR)	(!A0 * A1)	0.04880	0.29711	1.37517
	S0->Y (FR)	(A0 * !A1)	0.03498	0.40746	3.65125

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)	-	0.01603	0.26237	2.60318
	A1->Y (FF)	-	0.01415	0.25972	2.59726
	S0->Y (FF)	(!A0 * A1)	0.06977	0.38448	2.65575
	S0->Y (RF)	(A0 * !A1)	0.02467	0.29779	2.37489

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	-	-0.00404	-0.00404	-0.00405
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00266	-0.00265	-0.00266
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00524	0.00618	0.03263
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00263	-0.00216	0.02431

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	-	0.00404	0.00404	0.00405
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00266	0.00265	0.00266
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00073	0.00130	0.02801
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01113	0.01188	0.03773

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)	-0.00097	-0.00097	-0.00097

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)	0.00097	0.00097	0.00097

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)	-0.00116	-0.00116	-0.00116

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)	0.00116	0.00116	0.00116

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)	-0.00097	-0.00051	0.02612
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00094	-0.00051	0.02614

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)	0.00858	0.00923	0.03534
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00776	0.00856	0.03503

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00293	0.00294	0.98501
sky130_osu_sc_12T_ls__nand2_l	0.00225	0.00229	0.68530

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.01866	0.02541
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.01396	0.03065

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)	0.03412	0.77531	11.11620
	B->Y (FR)	0.03892	0.75000	10.68820
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.03857	0.84037	11.01310
	B->Y (FR)	0.04596	0.84605	11.00000

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)	0.03432	0.68303	9.73876
	B->Y (RF)	0.03886	0.65734	9.16581
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.03758	0.72344	9.29613
	B->Y (RF)	0.04190	0.69011	8.66066

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	0.00440	0.00472	0.00735
	B	0.00000	0.00000	0.00000
	B	0.00560	0.00583	0.00942
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00328	0.00354	0.00669
	B	0.00000	0.00000	0.00000
	B	0.00413	0.00433	0.00756

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	-0.00044	-0.00023	0.00282
	B	0.00000	0.00000	0.00000
	B	-0.00042	-0.00043	0.00231
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00028	-0.00023	0.00236
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00027	0.00200

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)	-0.00283	-0.00286	-0.00287
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00199	-0.00201	-0.00202

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)	0.00286	0.00290	0.00288
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00201	0.00204	0.00202

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)	-0.00266	-0.00266	-0.00266
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00189	-0.00190	-0.00189

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)	0.00274	0.00269	0.00266
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00194	0.00191	0.00190

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00289	0.00317	0.53705
sky130_osu_sc_12T_ls__nor2_l	0.00217	0.00239	0.38149

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.02026	0.04494
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.01438	0.02113

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)	0.07282	0.90431	10.48640
	B->Y (FR)	0.05661	0.90634	10.92570
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.07919	0.99238	10.46870
	B->Y (FR)	0.06589	0.99264	10.91460

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)	0.03038	0.44033	5.26239
	B->Y (RF)	0.02403	0.42878	5.24426
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.03171	0.45822	5.04043
	B->Y (RF)	0.02634	0.44785	5.02403

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	0.00595	0.00588	0.00990
	B	0.00000	0.00000	0.00000
	B	0.00452	0.00456	0.00987
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00428	0.00419	0.00782
	B	0.00000	0.00000	0.00000
	B	0.00337	0.00329	0.00828

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	0.00064	0.00064	0.00555
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00030	0.00443
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00044	0.00048	0.00452
	B	0.00000	0.00000	0.00000
	B	-0.00035	-0.00009	0.00370

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)	-0.00209	-0.00249	-0.00248
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00142	-0.00168	-0.00168

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)	0.00247	0.00249	0.00248
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00167	0.00168	0.00168

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)	-0.00105	-0.00106	-0.00105
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00074	-0.00075	-0.00074

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)	0.00111	0.00111	0.00107
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00078	0.00078	0.00076

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00294	0.00303	0.00255	0.53478

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.02588	0.03910

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)	0.08074	0.93306	10.93820
	A1->Y (FR)	0.10005	0.93322	10.50170
	B0->Y (FR)	0.04880	0.77387	9.55900

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)	0.04686	0.53544	6.16065
	A1->Y (RF)	0.05704	0.53706	6.08196
	B0->Y (RF)	0.03634	0.56822	6.95171

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	0.00633	0.00649	0.01105
	A1	0.00000	0.00000	0.00000
	A1	0.00780	0.00768	0.01129
	B0	0.00523	0.00545	0.00994

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	0.00025	0.00024	0.00381
	A1	0.00000	0.00000	0.00000
	A1	0.00147	0.00128	0.00494
	B0	0.00060	0.00069	0.00451

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)	-0.00106	-0.00106	-0.00106
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00249	-0.00251	-0.00251
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00255	-0.00257	-0.00256

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)	0.00111	0.00112	0.00107
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00249	0.00251	0.00251
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00262	0.00259	0.00257

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)	-0.00202	-0.00240	-0.00240
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00246	-0.00249	-0.00248
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00252	-0.00254	-0.00253

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)	0.00238	0.00240	0.00240
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00247	0.00249	0.00248
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00258	0.00256	0.00254

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)	-0.00209	-0.00210	-0.00214

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)	0.00214	0.00219	0.00215

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00277	0.00290	0.00307	0.00304	0.55299

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.02700	0.04494

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)	0.10646	0.92706	10.45230
	A1->Y (FR)	0.09085	0.92884	10.91090
	B0->Y (FR)	0.06127	0.90311	10.88800
	B1->Y (FR)	0.07838	0.89947	10.43020

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)	0.07799	0.58054	6.35874
	A1->Y (RF)	0.06284	0.56212	6.31739
	B0->Y (RF)	0.05340	0.59612	7.12053
	B1->Y (RF)	0.06918	0.61677	7.18452

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	0.01005	0.00996	0.01342
	A1	0.00859	0.00853	0.01316
	B0	0.00624	0.00647	0.01080
	B1	0.00779	0.00771	0.01109

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00231	0.00215	0.00571
	A1	0.00123	0.00119	0.00465
	B0	-0.00016	0.00009	0.00435
	B1	0.00101	0.00093	0.00534

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)	-0.00205	-0.00242	-0.00243
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00205	-0.00242	-0.00243
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00238	-0.00243	-0.00242
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00246	-0.00246	-0.00246

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)	0.00242	0.00244	0.00243
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00242	0.00244	0.00243
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00241	0.00243	0.00242
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00250	0.00249	0.00247

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)	-0.00102	-0.00103	-0.00102
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00102	-0.00103	-0.00102
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00238	-0.00242	-0.00240
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00245	-0.00246	-0.00245

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)	0.00108	0.00109	0.00104
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00108	0.00109	0.00104
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00240	0.00242	0.00240
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00251	0.00249	0.00246

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)	-0.00103	-0.00105	-0.00104
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00103	-0.00106	-0.00104
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00277	-0.00281	-0.00280
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00277	-0.00278	-0.00284

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)	0.00109	0.00110	0.00105
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00109	0.00110	0.00105
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00280	0.00281	0.00280
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00284	0.00290	0.00285

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)	-0.00203	-0.00240	-0.00241
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00203	-0.00240	-0.00241
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00281	-0.00288	-0.00286
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00281	-0.00281	-0.00288

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)	0.00241	0.00243	0.00241
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00241	0.00243	0.00241
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00287	0.00289	0.00286
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00289	0.00292	0.00290

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00325	0.00301	1.02464
sky130_osu_sc_12T_ls__or2_2	0.00325	0.00301	2.09481
sky130_osu_sc_12T_ls__or2_4	0.00325	0.00301	4.14102
sky130_osu_sc_12T_ls__or2_8	0.00325	0.00302	8.11337
sky130_osu_sc_12T_ls__or2_l	0.00242	0.00228	0.70887

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.04209	0.06065
sky130_osu_sc_12T_ls__or2_2	0.00000	0.06042	0.07034
sky130_osu_sc_12T_ls__or2_4	0.00000	0.10047	0.10559
sky130_osu_sc_12T_ls__or2_8	0.00000	0.18058	0.19546
sky130_osu_sc_12T_ls__or2_l	0.00000	0.02752	0.03862

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)	0.07692	0.64223	6.61952
	B->Y (RR)	0.06710	0.61089	6.48059
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.08139	0.55289	6.63217
	B->Y (RR)	0.07111	0.52554	6.50244
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.10433	0.53545	6.87647
	B->Y (RR)	0.09373	0.51308	6.75804
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.14954	0.57707	7.25371
	B->Y (RR)	0.13872	0.56050	7.15403
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.08182	0.70191	6.42343
	B->Y (RR)	0.07282	0.67277	6.30246

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)	0.13461	0.62796	5.92117
	B->Y (FF)	0.11160	0.62160	6.03181
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.16072	0.62614	6.22657
	B->Y (FF)	0.13814	0.62651	6.33379
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.22789	0.68862	6.60896
	B->Y (FF)	0.20532	0.69540	6.73237
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.36588	0.83801	7.07287
	B->Y (FF)	0.34341	0.84210	7.24152
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.14278	0.66382	5.78278
	B->Y (FF)	0.12140	0.66059	5.89715

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	0.00450	0.00455	0.02093
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00384	0.02118
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00747	0.00775	0.02441
	B	0.00000	0.00000	0.00000
	B	0.00626	0.00703	0.02464
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01420	0.01494	0.03194
	B	0.00000	0.00000	0.00000
	B	0.01297	0.01435	0.03172
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02843	0.02928	0.04635
	B	0.00000	0.00000	0.00000
	B	0.02716	0.02877	0.04709
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00337	0.00352	0.01743
	B	0.00000	0.00000	0.00000
	B	0.00258	0.00302	0.01807

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	0.00992	0.00971	0.02573
	B	0.00000	0.00000	0.00000
	B	0.00815	0.00898	0.02986
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01237	0.01234	0.02801
	B	0.00000	0.00000	0.00000
	B	0.01059	0.01151	0.03146
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01923	0.01856	0.03355
	B	0.00000	0.00000	0.00000
	B	0.01734	0.01758	0.03626
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03745	0.03150	0.04546
	B	0.00000	0.00000	0.00000
	B	0.03562	0.03040	0.04789
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00733	0.00724	0.02094
	B	0.00000	0.00000	0.00000
	B	0.00611	0.00686	0.02400

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)	-0.00212	-0.00252	-0.00250
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00212	-0.00252	-0.00250
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00212	-0.00252	-0.00250
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00212	-0.00252	-0.00250
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00142	-0.00170	-0.00169

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)	0.00248	0.00252	0.00250
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00252	0.00250
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00252	0.00250
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00252	0.00250
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00169	0.00170	0.00169

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)	-0.00105	-0.00106	-0.00106
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00105	-0.00106	-0.00105
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00105	-0.00106	-0.00105
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00105	-0.00106	-0.00105
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00072	-0.00073	-0.00072

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)	0.00111	0.00112	0.00107
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00112	0.00107
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00113	0.00108
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00113	0.00108
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00076	0.00077	0.00074

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00314	0.00409	0.55653
sky130_osu_sc_12T_ls__tbufi_l	0.00240	0.00311	0.37877

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.03148	0.03945
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.02108	0.03500

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)	0.05256	0.89738	10.92020
	OE->Y (FR)	0.05363	0.33107	5.09326
	OE->Y (RR)	0.08971	0.73779	6.53481
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.06373	0.99441	10.85790
	OE->Y (FR)	0.05529	0.33101	5.09322
	OE->Y (RR)	0.09821	0.83209	6.44859

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)	0.03357	0.55350	6.83597
	OE->Y (FF)	0.05448	0.33107	5.09326
	OE->Y (RF)	0.03074	0.51565	6.19085
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.03724	0.57353	6.41797
	OE->Y (FF)	0.05612	0.33104	5.09323
	OE->Y (RF)	0.03379	0.53236	5.72953

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	0.00424	0.00443	0.00892
	OE	0.00000	0.00000	0.00000
	OE	0.00430	0.00484	0.02925
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00318	0.00335	0.00749
	OE	0.00000	0.00000	0.00000
	OE	0.00311	0.00359	0.02406

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	-0.00056	-0.00030	0.00375
	OE	0.00000	0.00000	0.00000
	OE	0.00261	0.00317	0.03037
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00034	-0.00015	0.00317
	OE	0.00000	0.00000	0.00000
	OE	0.00183	0.00232	0.02434

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)	-0.00192	-0.00193	-0.00192
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00165	-0.00169	-0.00166
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00138	-0.00139	-0.00139
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00121	-0.00123	-0.00121

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)	0.00192	0.00193	0.00192
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00170	0.00171	0.00168
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00138	0.00139	0.00139
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00124	0.00124	0.00122

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)	0.00157	0.00217	0.02948
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00136	0.00199	0.02927
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00109	0.00162	0.02370
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00093	0.00147	0.02352

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)	0.00504	0.00571	0.03248
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00517	0.00583	0.03260
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00377	0.00447	0.02615
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00387	0.00456	0.02625

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00313	0.00471	0.55654
sky130_osu_sc_12T_ls__tnbufi_l	0.00229	0.00354	0.38644

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.02881	0.04746
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.02307	0.02903

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)	0.05305	0.89730	10.92010
	OE->Y (RR)	0.02916	0.33125	5.09343
	OE->Y (FR)	0.06497	0.88844	10.42350
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.06263	1.00139	10.99270
	OE->Y (RR)	0.03122	0.33098	5.09323
	OE->Y (FR)	0.07269	0.99414	10.49570

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)	0.03290	0.55333	6.83584
	OE->Y (RF)	0.02905	0.33124	5.09347
	OE->Y (FF)	0.06129	0.52744	4.95196
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.03561	0.57585	6.49873
	OE->Y (RF)	0.03108	0.33098	5.09323
	OE->Y (FF)	0.06723	0.56697	4.82542

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	0.00439	0.00458	0.00906
	OE	0.00000	0.00000	0.00000
	OE	0.01059	0.01164	0.03888
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00327	0.00342	0.00751
	OE	0.00000	0.00000	0.00000
	OE	0.00795	0.00882	0.03085

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	-0.00076	-0.00054	0.00357
	OE	0.00000	0.00000	0.00000
	OE	0.00907	0.01021	0.03446
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00033	0.00294
	OE	0.00000	0.00000	0.00000
	OE	0.00682	0.00768	0.02802

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)	-0.00157	-0.00159	-0.00158
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00134	-0.00137	-0.00134
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00108	-0.00109	-0.00108
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00093	-0.00094	-0.00092

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)	0.00157	0.00159	0.00158
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00137	0.00138	0.00135
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00108	0.00109	0.00108
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00095	0.00095	0.00094

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)	-0.00277	-0.00244	0.02512
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00270	-0.00236	0.02516
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00189	-0.00159	0.02064
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00186	-0.00156	0.02065

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)	0.00786	0.00894	0.03638
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00775	0.00902	0.03634
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00594	0.00689	0.02901
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00590	0.00690	0.02896

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00629	0.00541	0.58403

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.07075	0.08640

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	0.11431	0.78519	6.84843
	A->Y (FR)	!B	0.07148	0.92454	11.15540
	B->Y (RR)	A	0.09240	0.76521	6.88148
	B->Y (FR)	!A	0.08844	0.91885	10.70230

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	0.10654	0.61976	5.37779
	A->Y (RF)	!B	0.04539	0.53859	6.43723
	B->Y (FF)	A	0.09184	0.60600	5.37003
	B->Y (RF)	!A	0.05616	0.55272	6.44745

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	0.00459	0.00494	0.02991
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01070	0.01154	0.04279
	B	A	0.00000	0.00000	0.00000
	B	A	0.00180	0.00251	0.02983
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01150	0.01225	0.04224

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	0.01262	0.01291	0.03926
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00288	0.00340	0.03394
	B	A	0.00000	0.00000	0.00000
	B	A	0.01148	0.01249	0.03929
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00363	0.00405	0.03446

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.00630	0.00545	0.54102

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.07075	0.08527

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	0.11749	0.78470	6.71948
	A->Y (FR)	B	0.09091	0.92357	10.57180
	B->Y (RR)	!A	0.09735	0.77449	6.72232
	B->Y (FR)	A	0.09930	0.93272	10.56970

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	0.09921	0.59962	5.04750
	A->Y (RF)	B	0.04876	0.57000	6.73434
	B->Y (FF)	!A	0.09482	0.59813	5.12170
	B->Y (RF)	A	0.05474	0.53806	6.12842

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	0.01248	0.01313	0.04255
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00262	0.00244	0.02874
	B	A	0.00000	0.00000	0.00000
	B	A	0.01275	0.01348	0.04268
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00173	0.00229	0.02923

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	0.00234	0.00262	0.03300
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01315	0.01401	0.03744
	B	A	0.00000	0.00000	0.00000
	B	A	0.00239	0.00268	0.03220
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01163	0.01268	0.03898

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80,
Temp 100.00

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	0.31686
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	142885.00000	285770.00000
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
	-0.00174	0.03345	0.52054

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
	2.48785	2.37147	0.63126