sky130_osu_sc_12T_ls_tt_1P80_25C.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_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.01130	0.01135	0.00869	1.07107	0.47892	0.95537
sky130_osu_sc_12T_ls__addf_l	0.01129	0.01135	0.00871	0.72995	0.47937	0.95537

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.01444	0.01794
sky130_osu_sc_12T_ls__addf_l	0.00000	0.01188	0.01774

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)	0.15464	1.64815	22.50610
	B->CO (RR)	0.14948	1.61197	22.12290
	CI->CO (RR)	0.14618	1.67721	23.14480
	CON->CO (FR)	0.03053	0.80220	11.93990
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.15659	1.54917	18.47530
	B->CO (RR)	0.15152	1.52555	18.42470
	CI->CO (RR)	0.14811	1.57921	19.15040
	CON->CO (FR)	0.03635	0.87442	11.82100

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)	0.25862	2.31401	30.96400
	B->CO (FF)	0.23134	2.21156	29.80130
	CI->CO (FF)	0.22848	2.29738	31.33930
	CON->CO (RF)	0.02057	0.51714	7.70628
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.25210	2.05246	23.95930
	B->CO (FF)	0.22531	1.96692	23.16120
	CI->CO (FF)	0.22194	2.03578	24.34700
	CON->CO (RF)	0.02305	0.54048	7.37966

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)	0.21070	1.11739	11.33820
	B->CON (FR)	0.18299	1.03903	11.07110
	CI->CON (FR)	0.18060	1.10178	11.75080
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.19955	1.10693	11.33400
	B->CON (FR)	0.17300	1.02960	11.06730
	CI->CON (FR)	0.16944	1.09136	11.74670

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)	0.08797	0.53597	5.66618
	B->CON (RF)	0.08488	0.55228	6.03678
	CI->CON (RF)	0.07949	0.56768	6.32944
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.08504	0.53320	5.66603
	B->CON (RF)	0.08210	0.54972	6.03622
	CI->CON (RF)	0.07655	0.56502	6.32927

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)	0.37207	2.19789	24.67480
	B->S (-R)	0.37325	2.17845	24.07430
	CI->S (-R)	0.33978	2.17663	25.04670
	CON->S (RR)	0.09047	0.71220	7.04080
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.35790	2.18727	24.66430
	B->S (-R)	0.35949	2.16751	24.06500
	CI->S (-R)	0.32563	2.16583	25.03690
	CON->S (RR)	0.09049	0.71221	7.04039

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)	0.26807	1.39515	14.43460
	B->S (-F)	0.26572	1.35363	14.37980
	CI->S (-F)	0.25923	1.42120	15.08000
	CON->S (FF)	0.11781	0.66790	5.96878
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.26137	1.39019	14.43050
	B->S (-F)	0.25942	1.34935	14.37600
	CI->S (-F)	0.25255	1.41661	15.07600
	CON->S (FF)	0.11781	0.66786	5.96851

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	0.00246	0.00256	0.00521
	B	0.00353	0.00357	0.00577
	CI	0.00363	0.00383	0.00657
sky130_osu_sc_12T_ls__addf_l	A	0.00217	0.00223	0.00410
	B	0.00323	0.00322	0.00482
	CI	0.00333	0.00348	0.00537

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00910	0.00950	0.01705
	B	0.00950	0.00987	0.01634
	CI	0.00771	0.00811	0.01574
sky130_osu_sc_12T_ls__addf_l	A	0.00887	0.00916	0.01397
	B	0.00927	0.00954	0.01364
	CI	0.00748	0.00778	0.01280

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00910	0.00931	0.01240
	B	0.00950	0.00970	0.01227
	CI	0.00834	0.00865	0.01147
sky130_osu_sc_12T_ls__addf_l	A	0.00886	0.00903	0.01204
	B	0.00925	0.00944	0.01191
	CI	0.00809	0.00840	0.01111

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00286	0.00273	0.00378
	B	0.00350	0.00347	0.00482
	CI	0.00362	0.00375	0.00531
sky130_osu_sc_12T_ls__addf_l	A	0.00257	0.00242	0.00351
	B	0.00321	0.00317	0.00446
	CI	0.00333	0.00345	0.00498

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00910	0.00946	0.01614
	B	0.00950	0.00985	0.01556
	CI	0.00771	0.00808	0.01490
sky130_osu_sc_12T_ls__addf_l	A	0.00887	0.00920	0.01561
	B	0.00926	0.00959	0.01508
	CI	0.00748	0.00782	0.01438

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01992	0.01989	0.02431
	B	0.01814	0.01768	0.02381
	CI	0.01635	0.01613	0.02054
sky130_osu_sc_12T_ls__addf_l	A	0.01993	0.01990	0.02432
	B	0.01812	0.01768	0.02381
	CI	0.01636	0.01613	0.02055

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00555	0.00584	1.03391	1.05778	1.06698
sky130_osu_sc_12T_ls__addh_l	0.00554	0.00584	0.73433	1.05707	0.74195

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.01565	0.01749
sky130_osu_sc_12T_ls__addh_l	0.00000	0.01053	0.01237

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)	0.10693	0.71204	6.90948
	B->CO (RR)	0.10984	0.70656	6.95173
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.10780	0.77381	6.91175
	B->CO (RR)	0.11067	0.77104	6.95895

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)	0.09921	0.64725	6.25818
	B->CO (FF)	0.10472	0.66322	6.32386
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.09745	0.67164	6.12570
	B->CO (FF)	0.10282	0.68773	6.20038

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)	0.15519	0.73790	6.87569
	B->CON (RR)	0.15796	0.73212	6.91690
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.14339	0.72042	6.81682
	B->CON (RR)	0.14622	0.71567	6.86215

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)	0.12980	0.66910	6.33202
	B->CON (FF)	0.12888	0.67953	6.39102
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.12033	0.64947	6.20201
	B->CON (FF)	0.11957	0.65936	6.26218

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)	0.18372	1.43135	16.97240
	B->S (FR)	0.18301	1.44175	17.05650
	CON->S (FR)	0.03234	0.81082	12.05780
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.17767	1.38186	14.49250
	B->S (FR)	0.17697	1.39285	14.55090
	CON->S (FR)	0.03707	0.87791	11.96990

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)	0.19365	1.32445	15.06660
	B->S (RF)	0.19642	1.31845	15.11390
	CON->S (RF)	0.02016	0.51575	7.72178
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.18432	1.20247	11.63410
	B->S (RF)	0.18715	1.19813	11.68190
	CON->S (RF)	0.02254	0.54258	7.48332

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	0.00465	0.00447	0.00701
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00402	0.00633
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00410	0.00388	0.00664
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00345	0.00587

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	0.00655	0.00634	0.00874
	B	0.00000	0.00000	0.00000
	B	0.00688	0.00695	0.00948
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00600	0.00578	0.00838
	B	0.00000	0.00000	0.00000
	B	0.00632	0.00634	0.00899

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	0.00465	0.00448	0.00701
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00402	0.00632
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00410	0.00388	0.00659
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00343	0.00586

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	0.00655	0.00633	0.00880
	B	0.00000	0.00000	0.00000
	B	0.00688	0.00695	0.00954
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00600	0.00577	0.00823
	B	0.00000	0.00000	0.00000
	B	0.00633	0.00633	0.00882

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	0.00656	0.00634	0.00903
	B	0.00000	0.00000	0.00000
	B	0.00688	0.00696	0.00972
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00600	0.00579	0.00857
	B	0.00000	0.00000	0.00000
	B	0.00633	0.00635	0.00918

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	0.00465	0.00448	0.00723
	B	0.00000	0.00000	0.00000
	B	0.00424	0.00402	0.00634
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00410	0.00389	0.00656
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00343	0.00587

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)	1.10958	1.05955	0.29905
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.10966	1.05963	0.29913

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)	1.10954	1.06006	0.31962
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.10962	1.06014	0.31969

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00297	0.00307	1.04113
sky130_osu_sc_12T_ls__and2_2	0.00297	0.00308	2.06367
sky130_osu_sc_12T_ls__and2_4	0.00297	0.00308	4.02192
sky130_osu_sc_12T_ls__and2_6	0.00300	0.00307	5.93901
sky130_osu_sc_12T_ls__and2_8	0.00297	0.00308	7.81201
sky130_osu_sc_12T_ls__and2_l	0.00225	0.00232	0.73279

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.00722	0.01145
sky130_osu_sc_12T_ls__and2_2	0.00000	0.01146	0.01182
sky130_osu_sc_12T_ls__and2_4	0.00000	0.01996	0.02254
sky130_osu_sc_12T_ls__and2_6	0.00000	0.02846	0.03363
sky130_osu_sc_12T_ls__and2_8	0.00000	0.03696	0.04472
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00093	0.00142

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)	0.08195	0.64884	6.70019
	B->Y (RR)	0.08666	0.65104	6.70790
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.09129	0.57633	6.78247
	B->Y (RR)	0.09593	0.57359	6.78208
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.12397	0.57883	7.10524
	B->Y (RR)	0.12870	0.56737	7.09404
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.15680	0.60934	7.34839
	B->Y (RR)	0.16135	0.59148	7.31726
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.18843	0.64464	7.59115
	B->Y (RR)	0.19305	0.62477	7.55089
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.08836	0.71925	6.69655
	B->Y (RR)	0.09291	0.71901	6.68417

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)	0.07801	0.57944	5.77256
	B->Y (FF)	0.08099	0.59238	5.84273
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.09183	0.56640	5.97023
	B->Y (FF)	0.09417	0.57430	6.02481
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.13015	0.60369	6.34318
	B->Y (FF)	0.12984	0.60520	6.37933
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.17022	0.64894	6.61710
	B->Y (FF)	0.16719	0.64654	6.64080
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.20767	0.69140	6.81641
	B->Y (FF)	0.20232	0.68547	6.83530
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.07885	0.60621	5.63538
	B->Y (FF)	0.08559	0.62524	5.71248

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	0.00322	0.00299	0.01226
	B	0.00000	0.00000	0.00000
	B	0.00328	0.00279	0.00903
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00606	0.00603	0.01821
	B	0.00000	0.00000	0.00000
	B	0.00611	0.00591	0.01527
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01251	0.01292	0.02151
	B	0.00000	0.00000	0.00000
	B	0.01258	0.01292	0.01902
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01908	0.01981	0.02825
	B	0.00000	0.00000	0.00000
	B	0.01919	0.01977	0.02616
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02579	0.02658	0.03603
	B	0.00000	0.00000	0.00000
	B	0.02578	0.02654	0.03358
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00246	0.00237	0.01070
	B	0.00000	0.00000	0.00000
	B	0.00251	0.00224	0.00814

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	0.00813	0.00830	0.01619
	B	0.00000	0.00000	0.00000
	B	0.00922	0.00917	0.01666
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01027	0.01083	0.01865
	B	0.00000	0.00000	0.00000
	B	0.01137	0.01166	0.01907
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01566	0.01683	0.02459
	B	0.00000	0.00000	0.00000
	B	0.01669	0.01758	0.02483
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02125	0.02295	0.03076
	B	0.00000	0.00000	0.00000
	B	0.02229	0.02393	0.03086
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02698	0.02901	0.03678
	B	0.00000	0.00000	0.00000
	B	0.02797	0.02965	0.03662
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00614	0.00629	0.01370
	B	0.00000	0.00000	0.00000
	B	0.00690	0.00697	0.01400

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)	-0.00284	-0.00285	-0.00287
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00284	-0.00284	-0.00287
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00284	-0.00284	-0.00287
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00286	-0.00288	-0.00289
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00283	-0.00285	-0.00287
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00200	-0.00200	-0.00201

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)	0.00286	0.00290	0.00288
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00287	0.00290	0.00288
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00286	0.00290	0.00288
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00289	0.00292	0.00290
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00286	0.00289	0.00288
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00201	0.00203	0.00202

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)	-0.00271	-0.00273	-0.00271
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00271	-0.00273	-0.00271
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00271	-0.00273	-0.00271
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00271	-0.00272	-0.00271
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00271	-0.00273	-0.00271
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00191	-0.00192	-0.00191

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)	0.00275	0.00276	0.00272
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00275	0.00276	0.00272
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00275	0.00276	0.00272
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00275	0.00275	0.00272
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00275	0.00275	0.00272
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00193	0.00194	0.00192

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00271	0.00289	0.00286	0.45742

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00299	0.00555

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)	0.10635	1.02652	11.19590
	A1->Y (FR)	0.08487	0.93919	10.57720
	B0->Y (FR)	0.08203	1.02084	11.70940

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)	0.04482	0.47801	5.40004
	A1->Y (RF)	0.04119	0.50061	5.82686
	B0->Y (RF)	0.02790	0.46829	5.63267

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	0.00690	0.00680	0.00740
	A1	0.00000	0.00000	0.00000
	A1	0.00583	0.00568	0.00630
	B0	0.00554	0.00543	0.00656

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	0.00128	0.00103	0.00188
	A1	0.00000	0.00000	0.00000
	A1	0.00132	0.00109	0.00226
	B0	-0.00057	-0.00054	0.00050

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)	-0.00219	-0.00234	-0.00234
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00238	-0.00240	-0.00238
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00238	-0.00239	-0.00238

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)	0.00233	0.00236	0.00234
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00238	0.00241	0.00239
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00242	0.00241	0.00239

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)	-0.00219	-0.00236	-0.00234
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00238	-0.00240	-0.00239
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00261	-0.00263	-0.00263

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)	0.00234	0.00236	0.00234
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00238	0.00242	0.00239
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00262	0.00268	0.00264

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)	-0.00107	-0.00109	-0.00108

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)	0.00118	0.00119	0.00110

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00271	0.00289	0.00303	0.00284	0.45044

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00386	0.01109

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)	0.13638	1.05884	11.16200
	A1->Y (FR)	0.12127	1.03713	11.10060
	B0->Y (FR)	0.08719	1.01902	11.60560
	B1->Y (FR)	0.10287	1.03998	11.67950

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)	0.05885	0.49193	5.36965
	A1->Y (RF)	0.05513	0.51456	5.79487
	B0->Y (RF)	0.03214	0.48594	5.75959
	B1->Y (RF)	0.03626	0.46365	5.33783

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	0.00840	0.00828	0.00885
	A1	0.00733	0.00716	0.00768
	B0	0.00594	0.00575	0.00701
	B1	0.00702	0.00691	0.00815

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00266	0.00242	0.00327
	A1	0.00270	0.00252	0.00365
	B0	-0.00033	-0.00037	0.00085
	B1	-0.00028	-0.00038	0.00050

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)	-0.00223	-0.00233	-0.00234
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00238	-0.00240	-0.00238
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00238	-0.00240	-0.00238
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00238	-0.00239	-0.00238

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)	0.00233	0.00233	0.00234
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00238	0.00241	0.00239
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00242	0.00241	0.00239
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00242	0.00241	0.00239

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)	-0.00223	-0.00234	-0.00234
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00238	-0.00240	-0.00239
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00260	-0.00262	-0.00262
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00260	-0.00262	-0.00262

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)	0.00233	0.00234	0.00234
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00238	0.00242	0.00239
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00261	0.00267	0.00263
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00261	0.00267	0.00263

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)	-0.00107	-0.00108	-0.00107
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00106	-0.00107	-0.00107
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00272	-0.00274	-0.00274
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00272	-0.00274	-0.00274

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)	0.00123	0.00123	0.00111
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00106	0.00108	0.00107
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00273	0.00275	0.00275
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00273	0.00275	0.00275

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)	-0.00109	-0.00110	-0.00109
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00108	-0.00109	-0.00108
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00251	-0.00251	-0.00251
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00251	-0.00251	-0.00251

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)	0.00124	0.00125	0.00112
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00108	0.00109	0.00108
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00254	0.00253	0.00251
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00254	0.00255	0.00251

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00308	0.97728
sky130_osu_sc_12T_ls__buf_2	0.00308	2.01764
sky130_osu_sc_12T_ls__buf_4	0.00308	3.98726
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00309	7.79432
sky130_osu_sc_12T_ls__buf_l	0.00229	0.73544

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.00591	0.00591
sky130_osu_sc_12T_ls__buf_2	0.00000	0.00886	0.01145
sky130_osu_sc_12T_ls__buf_4	0.00000	0.01477	0.02254
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.02659	0.04472
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00079	0.00079

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)**	0.06408	0.62874	6.58810
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.06706	0.53802	6.67645
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.08902	0.51985	6.94217
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.13277	0.55939	7.34330
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.06814	0.68352	6.55754

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)**	0.07311	0.55943	5.50435
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.08712	0.55475	5.87092
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.12531	0.59556	6.29245
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.20226	0.68462	6.80386
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.07614	0.60049	5.63963

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	0.00305	0.00276	0.01010
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00588	0.00577	0.01311
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01230	0.01262	0.01995
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02521	0.02629	0.03442
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00235	0.00219	0.00976

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	0.00788	0.00788	0.01535
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00999	0.01026	0.01761
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01534	0.01610	0.02331
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02673	0.02820	0.03500
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00606	0.00622	0.01362

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
	-0.00065	-0.00064	-0.00064

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
	0.00065	0.00064	0.00064

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00283	0.00283	0.00889	1.04182	1.03036
sky130_osu_sc_12T_ls__dffr_l	0.00283	0.00283	0.00888	0.73724	0.72906

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.01850	0.02932
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.01339	0.02421

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)	0.35028	1.41239	13.87900
	QN->Q (FR)	0.03500	0.88016	12.99460
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.34394	1.51695	13.64990
	QN->Q (FR)	0.03896	0.93132	12.59960

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)	0.34238	1.44746	14.77200
	QN->Q (RF)	0.02239	0.56026	8.34022
	RN->Q (FF)	0.25431	1.51768	17.02070
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.34783	1.58224	14.59730
	QN->Q (RF)	0.02428	0.57808	7.97369
	RN->Q (FF)	0.26006	1.65180	16.83970

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)	0.30854	0.88405	6.87038
	RN->QN (FR)	0.21955	0.95390	9.11875
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.30930	0.95078	6.85428
	RN->QN (FR)	0.22133	1.02012	9.09431

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)**	0.29564	0.68528	3.74759
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.28433	0.69866	3.65255

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)	-0.06412	-0.08144	-0.15333
	setup	CK (R)	0.26941	0.29058	1.38923
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.06422	-0.08179	-0.15015
	setup	CK (R)	0.27023	0.29200	1.38639

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)	-0.14878	-0.38398	-4.02982
	setup	CK (R)	0.17373	0.39755	4.20398
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.14881	-0.38426	-4.01755
	setup	CK (R)	0.17353	0.39755	4.20398

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)	-0.06412	-0.08144	-0.15333
	setup	CK (R)	0.26941	0.29058	1.38923
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.06422	-0.08179	-0.15015
	setup	CK (R)	0.27023	0.29200	1.38639

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)	-0.14878	-0.38398	-4.02982
	setup	CK (R)	0.17373	0.39755	4.20398
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.14881	-0.38426	-4.01755
	setup	CK (R)	0.17353	0.39755	4.20398

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)	0.23776	0.26482	1.44045
	removal	CK (R)	-0.05288	-0.06278	-0.11080
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.23694	0.26261	1.40156
	removal	CK (R)	-0.05158	-0.06287	-0.11427

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)	0.23776	0.26482	1.44045
	removal	CK (R)	-0.05288	-0.06278	-0.11080
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.23694	0.26261	1.40156
	removal	CK (R)	-0.05158	-0.06287	-0.11427

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 ()	0.15719	0.42236	13.33370
	min_pulse_width	RN ()	0.15719	0.42236	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.15400	0.42236	13.33370
	min_pulse_width	RN ()	0.15400	0.42236	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 ()	0.16039	0.42236	13.33370
	min_pulse_width	CK ()	0.17636	0.42236	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.15080	0.42236	13.33370
	min_pulse_width	CK ()	0.17317	0.42236	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 ()	0.35386	0.44919	13.33370
	min_pulse_width	CK ()	0.14441	0.42236	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.35386	0.44919	13.33370
	min_pulse_width	CK ()	0.14122	0.42236	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	0.00786	0.00635	0.00000
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00703	0.00587	0.00525

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	0.00914	0.00794	0.00000
	RN	-0.00104	-0.05790	-0.84387
	RN	0.02076	0.01976	0.01132
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00829	0.00742	0.00574
	RN	-0.00104	-0.04705	-0.59716
	RN	0.01990	0.01924	0.01721

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	0.00914	0.00793	0.00000
	RN	-0.00104	-0.05751	-0.83459
	RN	0.02076	0.01977	0.01145
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00829	0.00742	0.00585
	RN	-0.00104	-0.04673	-0.59054
	RN	0.01990	0.01925	0.01724

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	0.00784	0.00633	0.00000
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00701	0.00585	0.00511

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	-0.00236	-0.00236
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00987	0.00935	0.01540
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00397	0.00353	0.00967
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00209	-0.00236	-0.00236
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00987	0.00935	0.01540
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00397	0.00353	0.00967

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	0.00235	0.00236	0.00236
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01527	0.01493	0.02072
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00746	0.00721	0.01293
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00235	0.00236	0.00236
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01527	0.01493	0.02072
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00746	0.00721	0.01293

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)	0.00308	0.00271	0.01208
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00927	0.00863	0.01800
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)	0.00308	0.00271	0.01208
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00927	0.00863	0.01800

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)	0.00787	0.00786	0.01682
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01577	0.01574	0.02420
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)	0.00787	0.00786	0.01682
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01577	0.01574	0.02420

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)	-0.00059	-0.00118	0.00813
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00503	0.00387	0.01330
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00063	-0.00114	0.00814
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00059	-0.00118	0.00813
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00503	0.00388	0.01330
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00063	-0.00111	0.00814

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)	0.01214	0.01188	0.02105
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02506	0.02424	0.03364
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01883	0.01841	0.02707
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02443	0.02386	0.04030
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01330	0.01296	0.02178
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01214	0.01189	0.02105
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02506	0.02424	0.03364
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01883	0.01841	0.02707
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02443	0.02387	0.04030
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01329	0.01296	0.02178

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00279	0.00285	0.00657	0.00895	1.07685	1.07197
sky130_osu_sc_12T_ls__dffsr_l	0.00279	0.00285	0.00657	0.00896	0.73452	0.72932

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.02276	0.02967
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.01764	0.02455

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)	0.36896	1.44468	14.17190
	QN->Q (FR)	0.03301	0.85075	12.70190
	RN->Q (RR)	0.29740	1.38572	14.21950
	SN->Q (FR)	0.28244	1.50679	16.62740
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.36872	1.55067	13.66220
	QN->Q (FR)	0.03888	0.92931	12.57010
	RN->Q (RR)	0.29726	1.49284	13.70180
	SN->Q (FR)	0.28196	1.61293	16.09870

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)	0.39112	1.50176	15.02160
	QN->Q (RF)	0.02222	0.56564	8.47815
	RN->Q (FF)	0.26904	1.53967	17.28350
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.39904	1.63595	14.60720
	QN->Q (RF)	0.02415	0.57675	7.95156
	RN->Q (FF)	0.27705	1.67377	16.85730

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)	0.35685	0.93460	6.97991
	RN->QN (FR)	0.23525	0.97188	9.23814
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.36006	1.00767	6.92629
	RN->QN (FR)	0.23834	1.04498	9.17798

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)	0.31683	0.72217	3.96246
	RN->QN (RF)	0.24591	0.66462	4.00777
	SN->QN (FF)	0.23085	0.78536	6.41940
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.31024	0.73519	3.71873
	RN->QN (RF)	0.23946	0.67833	3.76141
	SN->QN (FF)	0.22434	0.79783	6.15595

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)	-0.07317	-0.09170	5.57484
	setup	CK (R)	0.27760	0.29494	1.60704
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.07236	-0.09267	5.57462
	setup	CK (R)	0.27726	0.29514	1.60524

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)	-0.16771	-0.40545	-3.51426
	setup	CK (R)	0.20056	0.41431	4.30003
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.16942	-0.40483	-3.52382
	setup	CK (R)	0.20040	0.41431	4.30003

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)	-0.07317	-0.09170	5.57484
	setup	CK (R)	0.27760	0.29494	1.60704
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.07236	-0.09267	5.57462
	setup	CK (R)	0.27726	0.29514	1.60524

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)	-0.16771	-0.40545	-3.51426
	setup	CK (R)	0.20056	0.41431	4.30003
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.16942	-0.40483	-3.52382
	setup	CK (R)	0.20040	0.41431	4.30003

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)	0.22355	0.24260	1.42570
	removal	CK (R)	-0.03448	-0.04144	-0.08346
	hold	SN (R)	-0.22155	-0.37332	-1.74558
	setup	SN (R)	0.24680	0.40714	7.45613
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.22275	0.24257	1.42337
	removal	CK (R)	-0.03448	-0.04144	-0.08346
	hold	SN (R)	-0.21626	-0.36313	-1.69084
	setup	SN (R)	0.24575	0.39626	7.40383

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)	0.22355	0.24260	1.42570
	removal	CK (R)	-0.03448	-0.04144	-0.08346
	hold	SN (R)	-0.22214	-0.37332	-1.74558
	hold	SN (R)	-0.22155	-0.37501	-1.75390
	setup	SN (R)	0.24680	0.40308	7.33118
	setup	SN (R)	0.24669	0.40714	7.45613
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.22275	0.24257	1.42337
	removal	CK (R)	-0.03448	-0.04144	-0.08346
	hold	SN (R)	-0.21626	-0.36313	-1.69084
	hold	SN (R)	-0.21676	-0.36482	-1.70505
	setup	SN (R)	0.24575	0.39458	7.17484
	setup	SN (R)	0.23585	0.39626	7.40383

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 ()	0.17956	0.42236	13.33370
	min_pulse_width	RN ()	0.18595	0.42236	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.17956	0.42236	13.33370
	min_pulse_width	RN ()	0.18275	0.42236	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)	0.04147	0.07596	7.89147
	removal	CK (R)	-0.01782	-0.05410	-0.33282
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04101	0.07563	7.94932
	removal	CK (R)	-0.01782	-0.05410	-0.33282

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)	0.04147	0.07596	7.89147
	removal	CK (R)	-0.01782	-0.05410	-0.33282
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.04101	0.07563	7.94932
	removal	CK (R)	-0.01782	-0.05410	-0.33282

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 ()	0.22563	0.43130	13.33370
	min_pulse_width	SN ()	0.23333	0.43354	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.22429	0.42236	13.33370
	min_pulse_width	SN ()	0.22109	0.42236	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 ()	0.16358	0.42236	13.33370
	min_pulse_width	CK ()	0.19873	0.42236	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.15719	0.42236	13.33370
	min_pulse_width	CK ()	0.19553	0.42236	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 ()	0.36245	0.45142	13.33370
	min_pulse_width	CK ()	0.17317	0.42236	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.36245	0.45142	13.33370
	min_pulse_width	CK ()	0.17317	0.42236	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	0.00984	0.00834	-0.00110
	RN	0.01817	0.01682	0.00345
	SN	-0.00104	-0.05906	-0.87225
	SN	0.02032	0.01882	0.00525
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00906	0.00793	0.00724
	RN	0.01738	0.01643	0.01186
	SN	-0.00104	-0.04694	-0.59496
	SN	0.01953	0.01843	0.01380

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	0.01056	0.00965	0.00485
	RN	-0.00104	-0.05906	-0.87225
	RN	0.02187	0.02110	0.01600
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00972	0.00891	0.00734
	RN	-0.00104	-0.04694	-0.59496
	RN	0.02103	0.02035	0.01846

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	0.01056	0.00966	0.00484
	RN	-0.00104	-0.05890	-0.86830
	RN	0.02187	0.02110	0.01604
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00973	0.00892	0.00737
	RN	-0.00104	-0.04674	-0.59075
	RN	0.02103	0.02035	0.01852

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	0.00981	0.00833	-0.00113
	RN	0.01815	0.01680	0.00370
	SN	-0.00104	-0.05890	-0.86824
	SN	0.02029	0.01879	0.00544
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00903	0.00793	0.00705
	RN	0.01735	0.01639	0.01193
	SN	-0.00104	-0.04674	-0.59072
	SN	0.01950	0.01841	0.01360

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	-0.00232	-0.00238	-0.00238
	(!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)	0.01253	0.01204	0.01801
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00438	0.00396	0.01001
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00435	0.00393	0.00998
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00440	0.00398	0.01003
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00232	-0.00238	-0.00238
	(!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)	0.01253	0.01204	0.01801
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00438	0.00396	0.01001
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00435	0.00393	0.00998
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00440	0.00398	0.01003

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	0.00241	0.00238	0.00238
	(!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)	0.01754	0.01723	0.02264
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00823	0.00799	0.01359
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00826	0.00804	0.01360
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00820	0.00796	0.01356
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00241	0.00238	0.00238
	(!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)	0.01754	0.01723	0.02264
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00823	0.00799	0.01359
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00826	0.00804	0.01360
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00820	0.00796	0.01356

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)	0.00242	0.00202	0.01128
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01093	0.01023	0.01943
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)	0.00242	0.00202	0.01128
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01093	0.01023	0.01943

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)	0.00869	0.00867	0.01772
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01683	0.01674	0.02517
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)	0.00869	0.00869	0.01772
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01683	0.01674	0.02517

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)	-0.00602	-0.00605	-0.00605
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00623	-0.00649	-0.00649
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00593	-0.00606	-0.00606
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00279	0.00237	0.00914
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)	-0.00602	-0.00605	-0.00605
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00623	-0.00649	-0.00649
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00593	-0.00606	-0.00606
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00279	0.00236	0.00914

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)	0.00604	0.00618	0.00607
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00648	0.00653	0.00649
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00602	0.00609	0.00606
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01364	0.01328	0.01839
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)	0.00604	0.00618	0.00607
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00648	0.00653	0.00649
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00602	0.00609	0.00606
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01364	0.01328	0.01839

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)	-0.00066	-0.00125	0.00803
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00599	0.00485	0.01421
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00594	0.00480	0.01417
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00049	-0.00096	0.00829
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00300	0.00202	0.02005
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00066	-0.00125	0.00803
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00599	0.00485	0.01421
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00593	0.00480	0.01417
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00049	-0.00096	0.00829
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00300	0.00202	0.02005

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)	0.02798	0.02722	0.03651
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01237	0.01204	0.02122
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01917	0.01876	0.02741
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01923	0.01875	0.02738
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02679	0.02608	0.04232
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01331	0.01294	0.02176
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01665	0.01614	0.03355
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02798	0.02722	0.03651
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01237	0.01208	0.02122
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01917	0.01876	0.02741
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01923	0.01880	0.02738
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02679	0.02608	0.04232
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01331	0.01294	0.02176
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01665	0.01613	0.03356

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00281	0.00540	0.00882	1.03547	1.03421
sky130_osu_sc_12T_ls__dffs_l	0.00281	0.00540	0.00882	0.72963	0.73815

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.01752	0.02346
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.01240	0.01835

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)	0.25675	1.29730	13.66330
	QN->Q (FR)	0.03500	0.87299	12.90400
	SN->Q (FR)	0.20572	1.43609	16.12450
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.25748	1.40981	13.38660
	QN->Q (FR)	0.03893	0.92525	12.49500
	SN->Q (FR)	0.20632	1.54455	15.80380

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)	0.37723	1.48222	14.69210
	QN->Q (RF)	0.02229	0.55677	8.29183
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.38070	1.61053	14.46200
	QN->Q (RF)	0.02421	0.57443	7.91228

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)	0.34237	0.92411	6.91950
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.34131	0.99076	6.96553

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)	0.20847	0.57793	3.64836
	SN->QN (FF)	0.15654	0.71714	6.10830
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.20372	0.60272	3.59660
	SN->QN (FF)	0.15126	0.73704	6.01681

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)	-0.04872	-0.06959	-0.12298
	setup	CK (R)	0.18340	0.21839	1.22709
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.05072	-0.07137	-0.12385
	setup	CK (R)	0.18315	0.21834	1.22202

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)	-0.15202	-0.38484	-4.13131
	setup	CK (R)	0.19083	0.40133	4.23119
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.15175	-0.38630	-4.13723
	setup	CK (R)	0.19042	0.39936	4.56881

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)	-0.04872	-0.06959	-0.12298
	setup	CK (R)	0.18340	0.21839	1.22709
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.05072	-0.07137	-0.12385
	setup	CK (R)	0.18315	0.21834	1.22202

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)	-0.15202	-0.38484	-4.13131
	setup	CK (R)	0.19083	0.40133	4.23119
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.15175	-0.38630	-4.13723
	setup	CK (R)	0.19042	0.39936	4.56881

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)	0.04803	0.07484	7.76530
	removal	CK (R)	-0.02230	-0.05410	-0.34889
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04761	0.07473	7.66053
	removal	CK (R)	-0.02230	-0.05410	-0.34889

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)	0.04803	0.07484	7.76530
	removal	CK (R)	-0.02230	-0.05410	-0.34889
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04761	0.07473	7.66053
	removal	CK (R)	-0.02230	-0.05410	-0.34889

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 ()	0.14513	0.42460	13.33370
	min_pulse_width	SN ()	0.14834	0.42460	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.14122	0.42236	13.33370
	min_pulse_width	SN ()	0.14122	0.42236	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 ()	0.10608	0.42236	13.33370
	min_pulse_width	CK ()	0.18595	0.42236	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.10288	0.42236	13.33370
	min_pulse_width	CK ()	0.17956	0.42236	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 ()	0.26901	0.42236	13.33370
	min_pulse_width	CK ()	0.16039	0.42236	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.26901	0.42236	13.33370
	min_pulse_width	CK ()	0.16039	0.42236	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	0.00787	0.00635	-0.00024
	SN	-0.00104	-0.05768	-0.83873
	SN	0.01720	0.01574	0.00571
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00703	0.00587	0.00561
	SN	-0.00104	-0.04676	-0.59100
	SN	0.01635	0.01529	0.01294

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	0.00908	0.00794	0.00024
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00823	0.00742	0.00604

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	0.00908	0.00795	0.00026
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00824	0.00742	0.00592

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	0.00784	0.00633	-0.00026
	SN	-0.00104	-0.05764	-0.83765
	SN	0.01717	0.01573	0.00536
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00701	0.00586	0.00520
	SN	-0.00104	-0.04708	-0.59787
	SN	0.01633	0.01527	0.01277

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	-0.00235	-0.00241	-0.00241
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00959	0.00904	0.01516
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00395	0.00353	0.00965
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00235	-0.00241	-0.00241
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00959	0.00904	0.01516
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00395	0.00353	0.00965

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	0.00244	0.00241	0.00241
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01516	0.01480	0.02045
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00759	0.00736	0.01307
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00244	0.00241	0.00241
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01516	0.01480	0.02045
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00759	0.00736	0.01307

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)	-0.00440	-0.00444	-0.00443
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00296	0.00257	0.00977
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)	-0.00440	-0.00442	-0.00443
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00296	0.00256	0.00978

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)	0.00445	0.00448	0.00444
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00940	0.00906	0.01624
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)	0.00445	0.00448	0.00444
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00940	0.00906	0.01624

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)	-0.00059	-0.00118	0.00813
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00055	-0.00104	0.00825
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00264	0.00169	0.01993
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00059	-0.00118	0.00813
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00055	-0.00104	0.00825
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00264	0.00169	0.01993

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)	0.02485	0.02403	0.03364
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01215	0.01187	0.02106
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02418	0.02344	0.03982
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01322	0.01289	0.02171
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01577	0.01528	0.03299
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02485	0.02403	0.03364
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01215	0.01186	0.02106
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02418	0.02344	0.03982
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01322	0.01289	0.02171
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01577	0.01527	0.03299

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00296	0.00876	0.94620
sky130_osu_sc_12T_ls__dff_l	0.00296	0.00875	0.68623

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.02107	0.02383
sky130_osu_sc_12T_ls__dff_l	0.00000	0.01596	0.01871

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)	0.21580	0.79272	6.65863
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.21575	0.85634	6.64348

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)	0.32028	0.67588	3.49929
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.32233	0.71234	3.52044

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)	-0.04864	-0.06810	-0.16402
	setup	CK (R)	0.14482	0.18408	1.15414
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.04864	-0.06810	-0.16823
	setup	CK (R)	0.14476	0.18389	1.14975

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)	-0.14207	-0.38733	-4.17366
	setup	CK (R)	0.16890	0.39876	4.25305
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.14127	-0.38656	-4.17553
	setup	CK (R)	0.16890	0.39876	4.25308

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 ()	0.09010	0.42236	13.33370
	min_pulse_width	CK ()	0.16997	0.42236	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.08691	0.42236	13.33370
	min_pulse_width	CK ()	0.16678	0.42236	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** ()	0.22748	0.42236	13.33370
	min_pulse_width	**CK** ()	0.13164	0.42236	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK** ()	0.22748	0.42236	13.33370
	min_pulse_width	**CK** ()	0.13164	0.42236	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	0.01660	0.01536	0.03191
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01488	0.01370	0.03025

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	0.01858	0.01759	0.02683
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01690	0.01594	0.02514

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	-0.00235	-0.00235
	!CK	0.00000	0.00000	0.00000
	!CK	0.00869	0.00815	0.01424
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00208	-0.00235	-0.00235
	!CK	0.00000	0.00000	0.00000
	!CK	0.00869	0.00815	0.01424

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	0.00233	0.00236	0.00235
	!CK	0.00000	0.00000	0.00000
	!CK	0.01566	0.01527	0.02105
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00233	0.00236	0.00235
	!CK	0.00000	0.00000	0.00000
	!CK	0.01566	0.01527	0.02105

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)	-0.00063	-0.00121	0.00811
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00055	-0.00105	0.00825
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00063	-0.00121	0.00811
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00055	-0.00105	0.00825

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)	0.01212	0.01184	0.02104
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02393	0.02318	0.03291
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02452	0.02375	0.04042
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01315	0.01282	0.02164
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01212	0.01184	0.02104
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02393	0.02318	0.03291
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02452	0.02375	0.04042
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01315	0.01282	0.02164

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00287	0.96676
sky130_osu_sc_12T_ls__inv_10	0.02575	9.52781
sky130_osu_sc_12T_ls__inv_2	0.00534	1.98822
sky130_osu_sc_12T_ls__inv_3	0.00791	2.92495
sky130_osu_sc_12T_ls__inv_4	0.01042	3.93380
sky130_osu_sc_12T_ls__inv_6	0.01560	5.89724
sky130_osu_sc_12T_ls__inv_8	0.02067	7.68326
sky130_osu_sc_12T_ls__inv_l	0.00226	0.67896

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00295	0.00555
sky130_osu_sc_12T_ls__inv_10	0.00000	0.02954	0.05544
sky130_osu_sc_12T_ls__inv_2	0.00000	0.00591	0.01109
sky130_osu_sc_12T_ls__inv_3	0.00000	0.00886	0.01663
sky130_osu_sc_12T_ls__inv_4	0.00000	0.01182	0.02218
sky130_osu_sc_12T_ls__inv_6	0.00000	0.01772	0.03326
sky130_osu_sc_12T_ls__inv_8	0.00000	0.02363	0.04435
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00040	0.00062

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)**	0.03395	0.81973	11.89720
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.03716	0.53077	11.74660
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.02481	0.68749	11.80380
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.02636	0.64077	11.84650
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.02582	0.60383	11.79290
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.02833	0.56647	11.83520
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.03236	0.54270	11.71300
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.03913	0.87467	11.67800

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)**	0.02050	0.49742	7.26745
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02628	0.31822	7.45968
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01628	0.43079	7.40402
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01749	0.40427	7.50011
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01718	0.37812	7.49783
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02019	0.34852	7.54912
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02318	0.33121	7.48092
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02314	0.52274	7.07347

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	0.00404	0.00408	0.00507
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03290	0.03471	0.04511
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00694	0.00703	0.00913
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01067	0.01093	0.01397
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01358	0.01405	0.01808
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02008	0.02132	0.02708
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02653	0.02767	0.03614
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00315	0.00279	0.00420

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	-0.00069	-0.00063	0.00017
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01208	-0.01123	-0.00105
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00225	-0.00215	-0.00036
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00297	-0.00285	-0.00007
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00463	-0.00432	-0.00057
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00705	-0.00588	-0.00084
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00959	-0.00889	-0.00096
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00050	-0.00045	0.00029

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.17902	0.17894	0.00592	0.17684

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.00874	0.01662

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)	-	0.01379	0.25031	2.35920
	A1->Y (RR)	-	0.01648	0.25383	2.36185
	S0->Y (RR)	(!A0 * A1)	0.04672	0.26793	0.67541
	S0->Y (FR)	(A0 * !A1)	0.03658	0.41293	3.44103

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)	-	0.01573	0.24321	2.31156
	A1->Y (FF)	-	0.01390	0.24043	2.30558
	S0->Y (FF)	(!A0 * A1)	0.07280	0.38946	2.54886
	S0->Y (RF)	(A0 * !A1)	0.02265	0.26313	1.72668

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	-	-0.00394	-0.00394	-0.00394
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00257	-0.00257	-0.00257
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00524	0.00522	0.01517
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00252	-0.00285	0.00710

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	-	0.00394	0.00394	0.00394
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00257	0.00257	0.00258
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00069	0.00042	0.01056
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01083	0.01074	0.02020

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)	-0.00095	-0.00095	-0.00095

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)	0.00095	0.00095	0.00095

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)	-0.00114	-0.00114	-0.00115

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)	0.00114	0.00114	0.00115

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)	-0.00094	-0.00112	0.00885
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00091	-0.00129	0.00884

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)	0.00838	0.00826	0.01788
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00768	0.00761	0.01755

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00286	0.00286	0.95105
sky130_osu_sc_12T_ls__nand2_l	0.00221	0.00224	0.67758

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00297	0.01109
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00042	0.00124

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)	0.03573	0.81924	11.82050
	B->Y (FR)	0.04088	0.79073	11.34420
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.03980	0.87643	11.68850
	B->Y (FR)	0.04759	0.88433	11.67330

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)	0.03028	0.62305	8.97606
	B->Y (RF)	0.03434	0.60580	8.52411
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.03374	0.67427	8.83398
	B->Y (RF)	0.03759	0.65003	8.32600

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	0.00428	0.00430	0.00518
	B	0.00000	0.00000	0.00000
	B	0.00543	0.00541	0.00625
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00321	0.00284	0.00410
	B	0.00000	0.00000	0.00000
	B	0.00401	0.00375	0.00489

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	-0.00041	-0.00039	0.00033
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00049	0.00008
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00026	-0.00031	0.00041
	B	0.00000	0.00000	0.00000
	B	-0.00026	-0.00033	0.00021

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)	-0.00273	-0.00275	-0.00276
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00194	-0.00194	-0.00195

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)	0.00276	0.00279	0.00277
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00194	0.00197	0.00196

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)	-0.00255	-0.00254	-0.00255
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00182	-0.00183	-0.00182

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)	0.00259	0.00258	0.00256
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00184	0.00184	0.00183

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00281	0.00309	0.51534
sky130_osu_sc_12T_ls__nor2_l	0.00212	0.00234	0.37058

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00302	0.00555
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00042	0.00062

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)	0.07587	0.97228	11.36990
	B->Y (FR)	0.06042	0.96828	11.67530
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.08127	1.05094	11.22410
	B->Y (FR)	0.06896	1.04661	11.53650

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)	0.02690	0.41729	5.05956
	B->Y (RF)	0.02178	0.40625	5.04323
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.02862	0.43723	4.95297
	B->Y (RF)	0.02419	0.43099	4.93869

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	0.00566	0.00555	0.00620
	B	0.00000	0.00000	0.00000
	B	0.00441	0.00434	0.00567
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00409	0.00401	0.00472
	B	0.00000	0.00000	0.00000
	B	0.00330	0.00327	0.00465

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	0.00054	0.00035	0.00158
	B	0.00000	0.00000	0.00000
	B	-0.00055	-0.00052	0.00067
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00037	0.00034	0.00141
	B	0.00000	0.00000	0.00000
	B	-0.00034	-0.00027	0.00076

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)	-0.00208	-0.00238	-0.00237
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00142	-0.00161	-0.00161

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)	0.00236	0.00239	0.00237
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00161	0.00161	0.00161

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)	-0.00108	-0.00109	-0.00108
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00076	-0.00077	-0.00076

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)	0.00114	0.00114	0.00110
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00079	0.00080	0.00077

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00286	0.00295	0.00251	0.50973

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00188	0.00617

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)	0.08621	0.99074	11.64600
	A1->Y (FR)	0.10518	1.00042	11.33770
	B0->Y (FR)	0.04987	0.79923	9.97199

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)	0.04139	0.49848	5.83651
	A1->Y (RF)	0.04900	0.49871	5.77232
	B0->Y (RF)	0.03236	0.52555	6.50605

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	0.00611	0.00601	0.00717
	A1	0.00000	0.00000	0.00000
	A1	0.00741	0.00726	0.00768
	B0	0.00499	0.00496	0.00634

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	0.00016	0.00094
	A1	0.00000	0.00000	0.00000
	A1	0.00134	0.00110	0.00187
	B0	0.00178	0.00177	0.00275

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)	-0.00108	-0.00109	-0.00109
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00236	-0.00241	-0.00241
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00245	-0.00247	-0.00246

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)	0.00114	0.00115	0.00110
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00239	0.00241	0.00241
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00247	0.00248	0.00246

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)	-0.00201	-0.00231	-0.00229
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00233	-0.00239	-0.00239
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00242	-0.00244	-0.00243

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)	0.00228	0.00231	0.00229
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00238	0.00240	0.00239
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00243	0.00245	0.00243

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)	-0.00203	-0.00204	-0.00207

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)	0.00207	0.00212	0.00208

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00269	0.00282	0.00300	0.00295	0.53629

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00453	0.01109

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)	0.11207	1.00048	11.40670
	A1->Y (FR)	0.09700	0.99437	11.72860
	B0->Y (FR)	0.06433	0.96305	11.70200
	B1->Y (FR)	0.08095	0.96820	11.38150

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)	0.06649	0.54020	6.07516
	A1->Y (RF)	0.05416	0.52394	6.03948
	B0->Y (RF)	0.04597	0.55232	6.72226
	B1->Y (RF)	0.05889	0.57066	6.78627

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	0.00946	0.00934	0.00990
	A1	0.00816	0.00807	0.00919
	B0	0.00596	0.00592	0.00702
	B1	0.00734	0.00720	0.00776

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00206	0.00185	0.00255
	A1	0.00108	0.00099	0.00167
	B0	0.00105	0.00105	0.00201
	B1	0.00208	0.00187	0.00289

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	-0.00233	-0.00232
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00205	-0.00233	-0.00232
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00226	-0.00233	-0.00232
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00235	-0.00237	-0.00236

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)	0.00231	0.00233	0.00232
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00231	0.00233	0.00232
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00231	0.00233	0.00232
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00236	0.00238	0.00236

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)	-0.00105	-0.00106	-0.00105
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00105	-0.00106	-0.00105
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00225	-0.00231	-0.00230
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00234	-0.00235	-0.00235

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)	0.00111	0.00112	0.00107
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00111	0.00112	0.00107
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00229	0.00231	0.00230
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00235	0.00238	0.00236

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)	-0.00106	-0.00108	-0.00107
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00106	-0.00108	-0.00107
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00264	-0.00270	-0.00269
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00267	-0.00269	-0.00273

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)	0.00112	0.00113	0.00108
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00112	0.00113	0.00108
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00269	0.00270	0.00269
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00273	0.00279	0.00275

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	-0.00232	-0.00231
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00203	-0.00232	-0.00231
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00269	-0.00277	-0.00276
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00272	-0.00273	-0.00278

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)	0.00230	0.00233	0.00231
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00230	0.00233	0.00231
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00275	0.00277	0.00276
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00279	0.00282	0.00280

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00316	0.00294	0.97525
sky130_osu_sc_12T_ls__or2_2	0.00317	0.00294	2.01411
sky130_osu_sc_12T_ls__or2_4	0.00317	0.00294	3.94678
sky130_osu_sc_12T_ls__or2_8	0.00316	0.00294	7.72573
sky130_osu_sc_12T_ls__or2_l	0.00237	0.00223	0.69073

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00468	0.00627
sky130_osu_sc_12T_ls__or2_2	0.00000	0.00634	0.01182
sky130_osu_sc_12T_ls__or2_4	0.00000	0.00966	0.02290
sky130_osu_sc_12T_ls__or2_8	0.00000	0.01629	0.04508
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00071	0.00096

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)	0.07355	0.66124	6.65798
	B->Y (RR)	0.06550	0.63410	6.55029
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.07729	0.56804	6.74946
	B->Y (RR)	0.06876	0.54364	6.65161
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.09950	0.54287	6.96988
	B->Y (RR)	0.09076	0.52428	6.88344
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.14321	0.57725	7.38870
	B->Y (RR)	0.13431	0.56309	7.32007
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.07877	0.72444	6.54984
	B->Y (RR)	0.07127	0.69969	6.45986

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)	0.13786	0.64314	5.76578
	B->Y (FF)	0.11532	0.62576	5.74773
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.16707	0.64909	6.14357
	B->Y (FF)	0.14465	0.64017	6.12538
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.23789	0.71600	6.55123
	B->Y (FF)	0.21563	0.71041	6.57385
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.38114	0.87566	7.12948
	B->Y (FF)	0.35891	0.86687	7.19965
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.14515	0.67388	5.68374
	B->Y (FF)	0.12416	0.66109	5.66150

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	0.00428	0.00379	0.01008
	B	0.00000	0.00000	0.00000
	B	0.00325	0.00311	0.01029
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00713	0.00690	0.01324
	B	0.00000	0.00000	0.00000
	B	0.00607	0.00622	0.01343
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01360	0.01387	0.02023
	B	0.00000	0.00000	0.00000
	B	0.01248	0.01323	0.02068
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02655	0.02759	0.03535
	B	0.00000	0.00000	0.00000
	B	0.02543	0.02701	0.03542
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00324	0.00297	0.00858
	B	0.00000	0.00000	0.00000
	B	0.00254	0.00248	0.00896

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	0.00954	0.00916	0.01400
	B	0.00000	0.00000	0.00000
	B	0.00794	0.00816	0.01591
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01171	0.01171	0.01637
	B	0.00000	0.00000	0.00000
	B	0.01016	0.01059	0.01784
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01728	0.01766	0.02195
	B	0.00000	0.00000	0.00000
	B	0.01576	0.01650	0.02315
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03027	0.02927	0.03403
	B	0.00000	0.00000	0.00000
	B	0.02869	0.02809	0.03458
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00707	0.00683	0.01149
	B	0.00000	0.00000	0.00000
	B	0.00598	0.00620	0.01327

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)	-0.00211	-0.00241	-0.00239
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00211	-0.00240	-0.00239
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00212	-0.00241	-0.00239
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00212	-0.00241	-0.00239
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00142	-0.00164	-0.00162

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)	0.00238	0.00241	0.00239
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00237	0.00240	0.00239
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00238	0.00241	0.00239
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00238	0.00242	0.00239
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00161	0.00164	0.00162

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)	-0.00108	-0.00109	-0.00109
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00108	-0.00109	-0.00109
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00108	-0.00109	-0.00109
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00108	-0.00109	-0.00109
sky130_osu_sc_12T_ls__or2_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__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00114	0.00115	0.00110
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00114	0.00115	0.00110
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00114	0.00115	0.00110
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00114	0.00115	0.00110
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00078	0.00079	0.00076

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00307	0.00401	0.53505
sky130_osu_sc_12T_ls__tbufi_l	0.00235	0.00306	0.37204

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00313	0.01109
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00049	0.00125

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)	0.05586	0.95549	11.67870
	OE->Y (FR)	0.05493	0.32215	5.09331
	OE->Y (RR)	0.08937	0.77411	6.63493
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.06652	1.04693	11.56700
	OE->Y (FR)	0.05589	0.32205	5.09320
	OE->Y (RR)	0.09757	0.86964	6.62066

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)	0.02947	0.51096	6.38573
	OE->Y (FF)	0.05605	0.32216	5.09326
	OE->Y (RF)	0.02769	0.48323	5.91867
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.03330	0.53919	6.17065
	OE->Y (FF)	0.05741	0.32205	5.09322
	OE->Y (RF)	0.03079	0.50870	5.66377

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	0.00412	0.00404	0.00523
	OE	0.00000	0.00000	0.00000
	OE	0.00406	0.00381	0.01313
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00311	0.00306	0.00430
	OE	0.00000	0.00000	0.00000
	OE	0.00296	0.00282	0.01129

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	-0.00054	-0.00049	0.00051
	OE	0.00000	0.00000	0.00000
	OE	0.00253	0.00227	0.01263
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00033	-0.00029	0.00064
	OE	0.00000	0.00000	0.00000
	OE	0.00178	0.00163	0.01076

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)	-0.00189	-0.00191	-0.00190
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00169	-0.00172	-0.00169
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00137	-0.00137	-0.00137
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00122	-0.00124	-0.00122

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)	0.00189	0.00191	0.00190
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00172	0.00174	0.00170
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00137	0.00137	0.00137
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00125	0.00125	0.00123

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)	0.00149	0.00123	0.01169
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00132	0.00109	0.01152
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00104	0.00090	0.01010
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00089	0.00077	0.00995

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)	0.00485	0.00471	0.01468
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00503	0.00484	0.01479
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00364	0.00368	0.01252
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00378	0.00380	0.01262

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00306	0.00456	0.53752
sky130_osu_sc_12T_ls__tnbufi_l	0.00225	0.00345	0.37217

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00485	0.00591
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00064	0.00079

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)	0.05631	0.95714	11.71240
	OE->Y (RR)	0.02634	0.32206	5.09344
	OE->Y (FR)	0.06768	0.95756	11.38660
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.06533	1.04540	11.56600
	OE->Y (RR)	0.02920	0.32178	5.09317
	OE->Y (FR)	0.07465	1.04856	11.24880

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)	0.02886	0.51150	6.40321
	OE->Y (RF)	0.02618	0.32202	5.09341
	OE->Y (FF)	0.06008	0.52126	4.77032
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.03177	0.53782	6.17084
	OE->Y (RF)	0.02885	0.32177	5.09318
	OE->Y (FF)	0.06605	0.55612	4.62586

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	0.00427	0.00419	0.00536
	OE	0.00000	0.00000	0.00000
	OE	0.01020	0.01035	0.02079
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00319	0.00314	0.00439
	OE	0.00000	0.00000	0.00000
	OE	0.00770	0.00785	0.01706

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	-0.00074	-0.00072	0.00033
	OE	0.00000	0.00000	0.00000
	OE	0.00883	0.00899	0.01799
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00047	0.00045
	OE	0.00000	0.00000	0.00000
	OE	0.00667	0.00685	0.01513

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)	-0.00156	-0.00157	-0.00156
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00137	-0.00138	-0.00137
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00108	-0.00108	-0.00107
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00094	-0.00096	-0.00094

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)	0.00156	0.00157	0.00156
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00140	0.00141	0.00138
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00108	0.00108	0.00107
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00096	0.00097	0.00095

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)	-0.00268	-0.00318	0.00747
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00258	-0.00305	0.00750
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00184	-0.00218	0.00713
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00179	-0.00215	0.00714

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)	0.00764	0.00780	0.01828
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00749	0.00769	0.01822
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00581	0.00603	0.01524
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00575	0.00595	0.01518

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00614	0.00525	0.55255

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.00918	0.01700

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	0.11455	0.81705	6.85092
	A->Y (FR)	!B	0.07601	0.97820	11.81080
	B->Y (RR)	A	0.09366	0.79699	6.84762
	B->Y (FR)	!A	0.09298	0.98130	11.48300

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	0.10102	0.60515	5.09689
	A->Y (RF)	!B	0.04023	0.49978	6.05308
	B->Y (FF)	A	0.08946	0.59431	5.09083
	B->Y (RF)	!A	0.04840	0.51081	6.06280

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	0.00431	0.00392	0.01331
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01038	0.01016	0.02124
	B	A	0.00000	0.00000	0.00000
	B	A	0.00185	0.00172	0.01202
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01103	0.01094	0.02149

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	0.01216	0.01172	0.02134
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00279	0.00241	0.01333
	B	A	0.00000	0.00000	0.00000
	B	A	0.01114	0.01126	0.02120
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00344	0.00298	0.01392

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.00615	0.00529	0.51862

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.00918	0.01182

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	0.12108	0.82531	6.80625
	A->Y (FR)	B	0.09509	0.99200	11.44730
	B->Y (RR)	!A	0.09926	0.81481	6.80409
	B->Y (FR)	A	0.10440	1.00237	11.44980

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	0.09775	0.59430	4.89080
	A->Y (RF)	B	0.04119	0.52429	6.28607
	B->Y (FF)	!A	0.09270	0.59089	4.91750
	B->Y (RF)	A	0.04710	0.50077	5.83223

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	0.01206	0.01190	0.02223
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00258	0.00170	0.01193
	B	A	0.00000	0.00000	0.00000
	B	A	0.01225	0.01218	0.02247
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00176	0.00169	0.01223

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	0.00221	0.00166	0.01271
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01280	0.01279	0.02134
	B	A	0.00000	0.00000	0.00000
	B	A	0.00223	0.00169	0.01237
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01129	0.01147	0.02117

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

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	0.26070
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	133397.00000	266794.00000
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
	-0.00185	0.02659	0.42984

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
	2.32283	2.21367	0.53347