sky130_osu_sc_12T_ls_tt_1P80_150C.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_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.01175	0.01174	0.00900	1.15714	0.51101	1.03343
sky130_osu_sc_12T_ls__addf_l	0.01175	0.01174	0.00901	0.76991	0.51228	1.03336

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	1.32782	1.45572
sky130_osu_sc_12T_ls__addf_l	0.00000	1.28831	1.40018

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)	0.17145	1.75512	24.22690
	B->CO (RR)	0.17121	1.74721	24.14440
	CI->CO (RR)	0.16174	1.79507	25.02300
	CON->CO (FR)	0.02846	0.74257	11.01180
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.17511	1.63936	19.46990
	B->CO (RR)	0.17483	1.64111	19.66370
	CI->CO (RR)	0.16536	1.68036	20.28780
	CON->CO (FR)	0.03453	0.82220	10.99250

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)	0.24029	2.19754	29.94840
	B->CO (FF)	0.21269	2.10864	28.91320
	CI->CO (FF)	0.21082	2.19989	30.54890
	CON->CO (RF)	0.02379	0.57067	8.46366
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.23278	1.92167	22.50740
	B->CO (FF)	0.20706	1.83557	21.95620
	CI->CO (FF)	0.20324	1.92510	23.12570
	CON->CO (RF)	0.02619	0.58331	7.83486

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)	0.19106	0.98705	9.86644
	B->CON (FR)	0.16537	0.93993	9.92370
	CI->CON (FR)	0.16163	0.98895	10.50820
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.18099	0.97817	9.87336
	B->CON (FR)	0.15628	0.93193	9.92989
	CI->CON (FR)	0.15151	0.98314	10.51510

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)	0.11003	0.60286	6.13728
	B->CON (RF)	0.11058	0.63444	6.74684
	CI->CON (RF)	0.10030	0.64549	7.00461
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.10612	0.59952	6.14352
	B->CON (RF)	0.10679	0.63200	6.75300
	CI->CON (RF)	0.09636	0.64213	7.01102

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)	0.35325	2.04351	23.64560
	B->S (-R)	0.36630	2.04061	23.06040
	CI->S (-R)	0.32167	2.04291	24.24640
	CON->S (RR)	0.09423	0.67755	7.02460
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.34031	2.03311	23.63640
	B->S (-R)	0.35319	2.03094	23.04940
	CI->S (-R)	0.30872	2.03256	24.23490
	CON->S (RR)	0.09427	0.67751	7.02384

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)	0.28789	1.53569	16.61090
	B->S (-F)	0.28691	1.49974	16.62250
	CI->S (-F)	0.27771	1.57212	17.41440
	CON->S (FF)	0.11616	0.67077	6.32558
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.28029	1.53026	16.60470
	B->S (-F)	0.27954	1.49470	16.61680
	CI->S (-F)	0.27007	1.56661	17.40820
	CON->S (FF)	0.11622	0.67068	6.32513

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	0.00272	0.00357	0.02047
	B	0.00395	0.00466	0.02005
	CI	0.00404	0.00501	0.02192
sky130_osu_sc_12T_ls__addf_l	A	0.00238	0.00296	0.01473
	B	0.00361	0.00409	0.01489
	CI	0.00371	0.00442	0.01600

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00984	0.01167	0.04326
	B	0.01030	0.01186	0.04053
	CI	0.00832	0.01024	0.04213
sky130_osu_sc_12T_ls__addf_l	A	0.00954	0.01077	0.03068
	B	0.00998	0.01104	0.02897
	CI	0.00801	0.00933	0.02960

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00982	0.01082	0.02633
	B	0.01027	0.01116	0.02521
	CI	0.00830	0.00933	0.02510
sky130_osu_sc_12T_ls__addf_l	A	0.00953	0.01042	0.02481
	B	0.00997	0.01076	0.02381
	CI	0.00800	0.00899	0.02361

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00312	0.00337	0.01218
	B	0.00391	0.00430	0.01381
	CI	0.00403	0.00464	0.01464
sky130_osu_sc_12T_ls__addf_l	A	0.00279	0.00299	0.01142
	B	0.00358	0.00393	0.01298
	CI	0.00369	0.00425	0.01374

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00984	0.01152	0.03985
	B	0.01029	0.01173	0.03739
	CI	0.00831	0.01008	0.03871
sky130_osu_sc_12T_ls__addf_l	A	0.00954	0.01104	0.03713
	B	0.00998	0.01128	0.03489
	CI	0.00801	0.00960	0.03600

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.02127	0.02146	0.04799
	B	0.01951	0.01960	0.04558
	CI	0.01768	0.01762	0.04211
sky130_osu_sc_12T_ls__addf_l	A	0.02127	0.02146	0.04799
	B	0.01951	0.01959	0.04559
	CI	0.01767	0.01762	0.04211

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00577	0.00608	1.11327	1.14236	1.16363
sky130_osu_sc_12T_ls__addh_l	0.00576	0.00608	0.76372	1.14336	0.77638

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	1.34484	1.40138
sky130_osu_sc_12T_ls__addh_l	0.00000	1.26562	1.32236

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)	0.11569	0.69692	7.11284
	B->CO (RR)	0.11914	0.67899	7.08050
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.11764	0.76103	7.12503
	B->CO (RR)	0.12101	0.74514	7.07383

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)	0.09691	0.64137	6.52031
	B->CO (FF)	0.10232	0.65744	6.63072
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.09489	0.65402	6.09793
	B->CO (FF)	0.10015	0.67069	6.21422

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)	0.16401	0.72335	7.11088
	B->CON (RR)	0.16673	0.70382	7.08515
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.15133	0.70490	7.09575
	B->CON (RR)	0.15412	0.68741	7.05154

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)	0.13281	0.66932	6.64220
	B->CON (FF)	0.13008	0.67788	6.73600
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.12311	0.64814	6.53502
	B->CON (FF)	0.12061	0.65759	6.62853

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)	0.18307	1.42522	17.53180
	B->S (FR)	0.17996	1.43505	17.66780
	CON->S (FR)	0.03009	0.74874	11.18580
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.17845	1.35379	14.36350
	B->S (FR)	0.17536	1.36266	14.47310
	CON->S (FR)	0.03521	0.82662	11.09150

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)	0.20456	1.36553	16.38620
	B->S (RF)	0.20725	1.34598	16.35420
	CON->S (RF)	0.02341	0.57173	8.51902
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.19350	1.21996	12.32280
	B->S (RF)	0.19627	1.20061	12.27100
	CON->S (RF)	0.02565	0.58565	7.90512

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	0.00488	0.00522	0.01734
	B	0.00000	0.00000	0.00000
	B	0.00439	0.00460	0.01795
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00428	0.00454	0.01643
	B	0.00000	0.00000	0.00000
	B	0.00378	0.00391	0.01656

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	0.00690	0.00715	0.01984
	B	0.00000	0.00000	0.00000
	B	0.00724	0.00779	0.02089
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00630	0.00653	0.01893
	B	0.00000	0.00000	0.00000
	B	0.00663	0.00712	0.01927

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	0.00489	0.00522	0.01735
	B	0.00000	0.00000	0.00000
	B	0.00439	0.00460	0.01801
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00428	0.00454	0.01663
	B	0.00000	0.00000	0.00000
	B	0.00378	0.00392	0.01681

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	0.00690	0.00716	0.01969
	B	0.00000	0.00000	0.00000
	B	0.00724	0.00780	0.02091
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00630	0.00652	0.01900
	B	0.00000	0.00000	0.00000
	B	0.00663	0.00712	0.01988

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	0.00692	0.00716	0.02003
	B	0.00000	0.00000	0.00000
	B	0.00724	0.00780	0.02122
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00631	0.00654	0.01897
	B	0.00000	0.00000	0.00000
	B	0.00664	0.00712	0.01996

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	0.00488	0.00522	0.01745
	B	0.00000	0.00000	0.00000
	B	0.00439	0.00460	0.01807
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00428	0.00453	0.01643
	B	0.00000	0.00000	0.00000
	B	0.00378	0.00391	0.01663

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)	1.25164	1.19683	0.40057
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.25174	1.19694	0.40068

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)	1.25177	1.19838	0.43842
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.25186	1.19848	0.43854

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00310	0.00320	1.13085
sky130_osu_sc_12T_ls__and2_2	0.00309	0.00320	2.21072
sky130_osu_sc_12T_ls__and2_4	0.00309	0.00321	4.32190
sky130_osu_sc_12T_ls__and2_6	0.00312	0.00320	6.38163
sky130_osu_sc_12T_ls__and2_8	0.00309	0.00320	8.36124
sky130_osu_sc_12T_ls__and2_l	0.00233	0.00241	0.76772

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.52773	0.59008
sky130_osu_sc_12T_ls__and2_2	0.00000	0.59861	0.73158
sky130_osu_sc_12T_ls__and2_4	0.00000	0.95740	1.11137
sky130_osu_sc_12T_ls__and2_6	0.00000	1.31618	1.49117
sky130_osu_sc_12T_ls__and2_8	0.00000	1.67497	1.87096
sky130_osu_sc_12T_ls__and2_l	0.00000	0.48787	0.59799

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)	0.08862	0.63502	7.06227
	B->Y (RR)	0.09401	0.62452	6.88297
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.09953	0.56979	7.02232
	B->Y (RR)	0.10498	0.55308	6.83483
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.13554	0.58216	7.29206
	B->Y (RR)	0.14099	0.55690	7.08854
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.17301	0.62176	7.46916
	B->Y (RR)	0.17833	0.59001	7.25562
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.20956	0.66378	7.64650
	B->Y (RR)	0.21502	0.62959	7.41902
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.09442	0.70004	6.90519
	B->Y (RR)	0.09971	0.68731	6.71462

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)	0.07712	0.57554	6.11300
	B->Y (FF)	0.07968	0.58699	6.20143
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.08830	0.54358	6.17855
	B->Y (FF)	0.09053	0.55321	6.26315
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.12358	0.57441	6.46019
	B->Y (FF)	0.12351	0.57693	6.52940
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.16148	0.61970	6.65872
	B->Y (FF)	0.15887	0.61762	6.71786
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.19741	0.66085	6.78984
	B->Y (FF)	0.19274	0.65657	6.83782
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.07886	0.60391	5.82957
	B->Y (FF)	0.08509	0.62243	5.95466

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	0.00337	0.00448	0.04172
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00398	0.03321
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00650	0.00767	0.04423
	B	0.00000	0.00000	0.00000
	B	0.00655	0.00721	0.03614
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01400	0.01498	0.05096
	B	0.00000	0.00000	0.00000
	B	0.01402	0.01459	0.04322
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02264	0.02260	0.05711
	B	0.00000	0.00000	0.00000
	B	0.02268	0.02222	0.04981
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03222	0.03036	0.06607
	B	0.00000	0.00000	0.00000
	B	0.03231	0.02983	0.05764
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00256	0.00350	0.03319
	B	0.00000	0.00000	0.00000
	B	0.00261	0.00315	0.02799

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	0.00850	0.01007	0.04303
	B	0.00000	0.00000	0.00000
	B	0.00965	0.01113	0.04299
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01092	0.01278	0.04550
	B	0.00000	0.00000	0.00000
	B	0.01208	0.01365	0.04552
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01750	0.01929	0.05141
	B	0.00000	0.00000	0.00000
	B	0.01858	0.01996	0.05153
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02525	0.02629	0.05776
	B	0.00000	0.00000	0.00000
	B	0.02601	0.02673	0.05782
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03400	0.03231	0.06424
	B	0.00000	0.00000	0.00000
	B	0.03472	0.03345	0.06392
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00638	0.00764	0.03483
	B	0.00000	0.00000	0.00000
	B	0.00721	0.00844	0.03483

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)	-0.00300	-0.00301	-0.00304
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00300	-0.00302	-0.00304
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00300	-0.00301	-0.00303
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00302	-0.00303	-0.00306
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00299	-0.00302	-0.00303
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00210	-0.00211	-0.00212

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)	0.00304	0.00308	0.00305
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00304	0.00308	0.00306
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00304	0.00308	0.00306
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00307	0.00311	0.00309
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00305	0.00308	0.00306
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00212	0.00217	0.00213

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)	-0.00288	-0.00288	-0.00288
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00288	-0.00290	-0.00288
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00288	-0.00289	-0.00288
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00287	-0.00289	-0.00287
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00287	-0.00289	-0.00287
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00202	-0.00202	-0.00202

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)	0.00299	0.00295	0.00290
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00295	0.00290
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00293	0.00291
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00300	0.00293	0.00291
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00301	0.00294	0.00291
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00210	0.00207	0.00203

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00285	0.00303	0.00298	0.48744

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.32202	0.57005

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)	0.09771	0.90231	9.69890
	A1->Y (FR)	0.07903	0.83049	9.19200
	B0->Y (FR)	0.07291	0.91764	10.46060

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)	0.05785	0.53463	5.80369
	A1->Y (RF)	0.05374	0.57111	6.49294
	B0->Y (RF)	0.03145	0.50264	5.93357

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	0.00748	0.00749	0.01532
	A1	0.00000	0.00000	0.00000
	A1	0.00632	0.00629	0.01390
	B0	0.00447	0.00459	0.01470

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	0.00162	0.00157	0.00906
	A1	0.00000	0.00000	0.00000
	A1	0.00166	0.00178	0.01002
	B0	-0.00061	-0.00008	0.00852

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)	-0.00222	-0.00252	-0.00252
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00255	-0.00255	-0.00255
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00255	-0.00255	-0.00255

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)	0.00251	0.00252	0.00252
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00255	0.00257	0.00257
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00266	0.00260	0.00257

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)	-0.00222	-0.00252	-0.00252
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00255	-0.00256	-0.00256
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00278	-0.00279	-0.00280

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)	0.00250	0.00254	0.00252
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00256	0.00259	0.00257
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00280	0.00286	0.00282

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)	-0.00102	-0.00105	-0.00103

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)	0.00114	0.00115	0.00106

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00285	0.00302	0.00315	0.00297	0.48106

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.37744	0.62193

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)	0.12453	0.93204	9.67928
	A1->Y (FR)	0.11145	0.91355	9.62670
	B0->Y (FR)	0.07758	0.91643	10.37950
	B1->Y (FR)	0.09118	0.93665	10.44770

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)	0.07724	0.55275	5.77976
	A1->Y (RF)	0.07297	0.58933	6.46755
	B0->Y (RF)	0.03869	0.54881	6.41984
	B1->Y (RF)	0.04376	0.51353	5.73483

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	0.00922	0.00915	0.01702
	A1	0.00805	0.00776	0.01563
	B0	0.00489	0.00536	0.01496
	B1	0.00610	0.00637	0.01607

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00325	0.00323	0.01105
	A1	0.00329	0.00338	0.01193
	B0	-0.00036	0.00004	0.00847
	B1	-0.00029	-0.00013	0.00756

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)	-0.00217	-0.00252	-0.00252
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00255	-0.00256	-0.00255
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00255	-0.00256	-0.00255
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00255	-0.00255	-0.00255

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)	0.00250	0.00252	0.00252
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00255	0.00257	0.00257
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00268	0.00260	0.00257
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00268	0.00259	0.00257

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)	-0.00217	-0.00252	-0.00252
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00256	-0.00256	-0.00256
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00277	-0.00278	-0.00279
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00277	-0.00278	-0.00279

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)	0.00251	0.00254	0.00252
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00257	0.00258	0.00257
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00279	0.00285	0.00281
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00280	0.00285	0.00281

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)	-0.00102	-0.00105	-0.00103
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00100	-0.00101	-0.00101
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00288	-0.00290	-0.00291
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00288	-0.00288	-0.00291

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)	0.00119	0.00120	0.00107
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00102	0.00103	0.00102
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00291	0.00293	0.00292
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00291	0.00293	0.00292

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)	-0.00104	-0.00106	-0.00104
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00102	-0.00103	-0.00103
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00268	-0.00269	-0.00268
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00268	-0.00269	-0.00268

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)	0.00120	0.00121	0.00108
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00103	0.00104	0.00104
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00279	0.00272	0.00269
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00279	0.00272	0.00269

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00321	1.05275
sky130_osu_sc_12T_ls__buf_2	0.00321	2.15005
sky130_osu_sc_12T_ls__buf_4	0.00320	4.30812
sky130_osu_sc_12T_ls__buf_6	0.00084	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00321	8.48586
sky130_osu_sc_12T_ls__buf_l	0.00237	0.76994

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.54274	0.54274
sky130_osu_sc_12T_ls__buf_2	0.00000	0.63716	0.68424
sky130_osu_sc_12T_ls__buf_4	0.00000	1.00295	1.06403
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	1.73453	1.82361
sky130_osu_sc_12T_ls__buf_l	0.00000	0.46372	0.46372

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)**	0.06644	0.59661	6.62721
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.07062	0.51414	6.63161
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.09372	0.50681	6.92658
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.14037	0.55752	7.28618
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.07061	0.65175	6.57188

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)**	0.07228	0.55267	5.85756
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.08380	0.53313	6.13185
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.11901	0.56817	6.51829
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.19216	0.65732	6.92534
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.07617	0.60110	5.95341

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	0.00315	0.00431	0.03371
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00618	0.00747	0.03712
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01324	0.01473	0.04437
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02882	0.02967	0.06105
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00242	0.00344	0.03179

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	0.00819	0.00982	0.04269
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01053	0.01225	0.04486
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01706	0.01858	0.05033
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03339	0.03164	0.06252
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00626	0.00778	0.03623

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
	-0.00069	-0.00069	-0.00066

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
	0.00069	0.00069	0.00066

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00297	0.00295	0.00905	1.12361	1.11829
sky130_osu_sc_12T_ls__dffr_l	0.00297	0.00295	0.00905	0.77191	0.76851

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	2.21325	2.49415
sky130_osu_sc_12T_ls__dffr_l	0.00000	2.13422	2.41513

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)	0.34901	1.46207	15.25960
	QN->Q (FR)	0.03244	0.81315	11.97440
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.34264	1.55772	14.62290
	QN->Q (FR)	0.03689	0.87269	11.66690

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)	0.34289	1.46089	15.63400
	QN->Q (RF)	0.02552	0.61061	8.99056
	RN->Q (FF)	0.25318	1.47502	16.97950
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.34881	1.58420	15.09070
	QN->Q (RF)	0.02732	0.61859	8.33247
	RN->Q (FF)	0.25955	1.59920	16.43460

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)	0.30686	0.85315	6.92816
	RN->QN (FR)	0.21702	0.86751	8.27259
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.30880	0.92370	6.92212
	RN->QN (FR)	0.21931	0.93776	8.26157

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)**	0.29940	0.74690	5.02876
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.28683	0.75197	4.66639

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)	-0.08478	-0.09163	0.04602
	setup	CK (R)	0.27162	0.28760	1.22087
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.08602	-0.08960	0.04374
	setup	CK (R)	0.26872	0.28872	1.26240

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)	-0.13985	-0.32250	-2.78224
	setup	CK (R)	0.16793	0.33551	3.61689
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.14261	-0.32398	-2.68353
	setup	CK (R)	0.16788	0.33551	3.61689

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)	-0.08478	-0.09163	0.04602
	setup	CK (R)	0.27162	0.28760	1.22087
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.08602	-0.08960	0.04374
	setup	CK (R)	0.26872	0.28872	1.26240

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)	-0.13985	-0.32250	-2.78224
	setup	CK (R)	0.16793	0.33551	3.61689
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.14261	-0.32398	-2.68353
	setup	CK (R)	0.16788	0.33551	3.61689

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)	0.22753	0.25532	1.40949
	removal	CK (R)	-0.05797	-0.06746	-0.11458
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.22900	0.25557	1.43926
	removal	CK (R)	-0.05797	-0.06746	-0.11458

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)	0.22753	0.25532	1.40949
	removal	CK (R)	-0.05797	-0.06746	-0.11458
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.22900	0.25557	1.43926
	removal	CK (R)	-0.05797	-0.06746	-0.11458

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 ()	0.15389	0.44678	13.33370
	min_pulse_width	RN ()	0.15389	0.44678	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.15053	0.44678	13.33370
	min_pulse_width	RN ()	0.15053	0.44678	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 ()	0.17073	0.44678	13.33370
	min_pulse_width	CK ()	0.17746	0.44678	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.16063	0.44678	13.33370
	min_pulse_width	CK ()	0.17409	0.44678	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 ()	0.34915	0.44678	13.33370
	min_pulse_width	CK ()	0.14043	0.44678	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.34915	0.44678	13.33370
	min_pulse_width	CK ()	0.13706	0.44678	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	0.00857	0.00848	0.02540
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00762	0.00790	0.03224

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	0.00981	0.00928	0.01673
	RN	-0.00106	-0.06094	-0.91012
	RN	0.02197	0.02175	0.02927
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00890	0.00883	0.02452
	RN	-0.00106	-0.04865	-0.62525
	RN	0.02105	0.02130	0.03693

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	0.00980	0.00929	0.01675
	RN	-0.00106	-0.06076	-0.90580
	RN	0.02196	0.02175	0.02918
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00890	0.00883	0.02443
	RN	-0.00106	-0.04852	-0.62249
	RN	0.02105	0.02129	0.03676

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	0.00852	0.00845	0.02538
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00758	0.00786	0.03199

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	-0.00211	-0.00250	-0.00253
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01060	0.01084	0.04204
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00434	0.00468	0.03566
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00211	-0.00250	-0.00253
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01060	0.01084	0.04204
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00434	0.00468	0.03566

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	0.00255	0.00259	0.00257
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01647	0.01687	0.04873
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00810	0.00846	0.03949
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00255	0.00259	0.00257
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01647	0.01687	0.04872
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00810	0.00846	0.03949

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)	0.00316	0.00416	0.04480
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00959	0.01038	0.05206
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)	0.00316	0.00416	0.04480
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00959	0.01038	0.05206

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)	0.00822	0.00977	0.04972
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01662	0.01771	0.05871
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)	0.00821	0.00977	0.04972
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01662	0.01771	0.05871

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)	-0.00064	0.00012	0.04110
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00536	0.00574	0.04821
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00067	0.00016	0.04099
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00064	0.00011	0.04110
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00536	0.00573	0.04821
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00067	0.00016	0.04099

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)	0.01233	0.01365	0.05436
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02628	0.02700	0.07594
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01975	0.02084	0.06227
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02552	0.02786	0.09418
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01388	0.01502	0.05511
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01233	0.01365	0.05436
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02628	0.02699	0.07594
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01975	0.02084	0.06227
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02552	0.02786	0.09417
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01388	0.01502	0.05511

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00294	0.00297	0.00685	0.00912	1.15460	1.15708
sky130_osu_sc_12T_ls__dffsr_l	0.00294	0.00297	0.00685	0.00912	0.76546	0.76961

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	2.40126	3.02033
sky130_osu_sc_12T_ls__dffsr_l	0.00000	2.32224	2.94131

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)	0.36336	1.48384	15.47100
	QN->Q (FR)	0.03070	0.78679	11.67290
	RN->Q (RR)	0.29039	1.42249	15.49760
	SN->Q (FR)	0.26966	1.47657	16.86760
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.36312	1.57980	14.52760
	QN->Q (FR)	0.03682	0.86930	11.59970
	RN->Q (RR)	0.29057	1.51848	14.54910
	SN->Q (FR)	0.26831	1.56700	15.90470

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)	0.40311	1.53023	15.85670
	QN->Q (RF)	0.02533	0.61589	9.13132
	RN->Q (FF)	0.26709	1.49676	17.18840
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.41153	1.64935	15.04280
	QN->Q (RF)	0.02717	0.61608	8.28610
	RN->Q (FF)	0.27565	1.61694	16.37110

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)	0.36634	0.91840	7.02074
	RN->QN (FR)	0.23031	0.88579	8.35279
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.37081	0.99558	7.01240
	RN->QN (FR)	0.23549	0.96308	8.33705

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)	0.31591	0.77499	5.21632
	RN->QN (RF)	0.24349	0.71394	5.24066
	SN->QN (FF)	0.22147	0.76494	6.60838
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.30847	0.77997	4.69777
	RN->QN (RF)	0.23634	0.71986	4.71945
	SN->QN (FF)	0.21437	0.76812	6.07568

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)	-0.09003	-0.09792	-0.00592
	setup	CK (R)	0.27427	0.28854	1.25457
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.09090	-0.09900	-0.00664
	setup	CK (R)	0.27382	0.28871	1.26912

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)	-0.16562	-0.34723	-2.87280
	setup	CK (R)	0.19877	0.35879	3.68248
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.16491	-0.34829	-2.84556
	setup	CK (R)	0.19877	0.35879	3.68398

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)	-0.09003	-0.09792	-0.00592
	setup	CK (R)	0.27427	0.28854	1.25457
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.09090	-0.09900	-0.00664
	setup	CK (R)	0.27382	0.28871	1.26912

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)	-0.16562	-0.34723	-2.87280
	setup	CK (R)	0.19877	0.35879	3.68248
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.16491	-0.34829	-2.84556
	setup	CK (R)	0.19877	0.35879	3.68398

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)	0.20589	0.22716	1.30333
	removal	CK (R)	-0.03505	-0.03908	-0.06112
	hold	SN (R)	-0.20883	-0.34516	-1.31011
	setup	SN (R)	0.24148	0.37863	6.00956
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.20571	0.22743	1.30623
	removal	CK (R)	-0.03505	-0.03908	-0.06112
	hold	SN (R)	-0.20243	-0.33414	-1.26126
	setup	SN (R)	0.23881	0.37161	5.98310

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)	0.20589	0.22716	1.30333
	removal	CK (R)	-0.03505	-0.03908	-0.06112
	hold	SN (R)	-0.20883	-0.34516	-1.31011
	hold	SN (R)	-0.21092	-0.34655	-1.32030
	setup	SN (R)	0.23891	0.37561	5.79851
	setup	SN (R)	0.24148	0.37863	6.00956
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.20571	0.22743	1.30623
	removal	CK (R)	-0.03505	-0.03908	-0.06112
	hold	SN (R)	-0.20243	-0.33414	-1.26126
	hold	SN (R)	-0.20423	-0.33635	-1.27382
	setup	SN (R)	0.23881	0.36721	5.80546
	setup	SN (R)	0.23203	0.37161	5.98310

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 ()	0.17746	0.44678	13.33370
	min_pulse_width	RN ()	0.18419	0.44678	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.17746	0.44678	13.33370
	min_pulse_width	RN ()	0.17746	0.44678	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)	0.05233	0.08179	5.51230
	removal	CK (R)	-0.02606	-0.06248	-0.33848
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.05084	0.08179	5.36215
	removal	CK (R)	-0.02606	-0.06248	-0.33848

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)	0.05233	0.08179	5.51230
	removal	CK (R)	-0.02606	-0.06248	-0.33848
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.05084	0.08179	5.36215
	removal	CK (R)	-0.02606	-0.06248	-0.33848

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 ()	0.21449	0.44678	13.33370
	min_pulse_width	SN ()	0.22122	0.44678	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.21449	0.44678	13.33370
	min_pulse_width	SN ()	0.21112	0.44678	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 ()	0.16736	0.44678	13.33370
	min_pulse_width	CK ()	0.20103	0.44678	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.16063	0.44678	13.33370
	min_pulse_width	CK ()	0.20103	0.44678	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 ()	0.35252	0.44678	13.33370
	min_pulse_width	CK ()	0.17409	0.44678	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.35252	0.44678	13.33370
	min_pulse_width	CK ()	0.17409	0.44678	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	0.01075	0.01058	0.02726
	RN	0.01926	0.01882	0.02608
	SN	-0.00106	-0.06194	-0.93522
	SN	0.01873	0.01773	0.02952
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00986	0.01006	0.03457
	RN	0.01837	0.01828	0.03303
	SN	-0.00106	-0.04840	-0.62002
	SN	0.01786	0.01720	0.03616

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	0.01144	0.01127	0.02315
	RN	-0.00106	-0.06194	-0.93522
	RN	0.02313	0.02321	0.03554
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01054	0.01050	0.02627
	RN	-0.00106	-0.04840	-0.62002
	RN	0.02222	0.02245	0.03862

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	0.01143	0.01125	0.02286
	RN	-0.00106	-0.06202	-0.93721
	RN	0.02312	0.02321	0.03523
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01053	0.01050	0.02612
	RN	-0.00106	-0.04856	-0.62339
	RN	0.02221	0.02243	0.03853

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	0.01070	0.01057	0.02693
	RN	0.01921	0.01875	0.02585
	SN	-0.00106	-0.06202	-0.93716
	SN	0.01869	0.01769	0.02936
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00982	0.01002	0.03393
	RN	0.01832	0.01823	0.03285
	SN	-0.00106	-0.04856	-0.62335
	SN	0.01782	0.01718	0.03627

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	-0.00251	-0.00253	-0.00254
	(!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)	0.01350	0.01375	0.04477
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00485	0.00517	0.03591
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00478	0.00511	0.03592
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00483	0.00516	0.03592
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00251	-0.00253	-0.00254
	(!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)	0.01350	0.01375	0.04477
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00485	0.00517	0.03591
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00478	0.00511	0.03592
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00483	0.00516	0.03592

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	0.00267	0.00261	0.00258
	(!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)	0.01906	0.01933	0.05077
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00880	0.00918	0.04002
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00888	0.00923	0.04000
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00877	0.00915	0.03997
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00267	0.00261	0.00258
	(!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)	0.01906	0.01933	0.05077
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00880	0.00918	0.04002
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00888	0.00923	0.04000
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00877	0.00915	0.03997

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)	0.00233	0.00329	0.04380
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01127	0.01202	0.05363
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)	0.00233	0.00328	0.04380
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01127	0.01202	0.05363

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)	0.00894	0.01054	0.05070
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01766	0.01875	0.06019
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)	0.00894	0.01054	0.05070
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01765	0.01874	0.06018

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)	-0.00634	-0.00636	-0.00638
	(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	-0.00684	-0.00684
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00609	-0.00639	-0.00639
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00339	0.00380	0.03490
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)	-0.00634	-0.00636	-0.00638
	(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	-0.00684	-0.00684
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00609	-0.00639	-0.00639
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00339	0.00380	0.03490

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)	0.00641	0.00655	0.00644
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00683	0.00685	0.00688
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00640	0.00648	0.00644
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01446	0.01444	0.04421
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)	0.00641	0.00655	0.00644
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00683	0.00685	0.00688
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00640	0.00648	0.00644
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01446	0.01444	0.04420

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)	-0.00071	0.00004	0.04100
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00630	0.00673	0.04911
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00619	0.00661	0.04902
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00052	0.00030	0.04110
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00313	0.00469	0.07905
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00071	0.00004	0.04100
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00630	0.00673	0.04911
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00619	0.00661	0.04904
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00052	0.00030	0.04110
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00313	0.00469	0.07905

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)	0.02949	0.03024	0.07888
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01255	0.01385	0.05455
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02015	0.02124	0.06262
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02022	0.02131	0.06285
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02816	0.03020	0.09685
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01390	0.01502	0.05509
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01710	0.01939	0.09320
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02949	0.03024	0.07888
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01255	0.01385	0.05455
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02015	0.02124	0.06262
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02022	0.02131	0.06284
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02816	0.03020	0.09685
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01390	0.01502	0.05509
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01710	0.01939	0.09320

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00295	0.00555	0.00904	1.12363	1.11965
sky130_osu_sc_12T_ls__dffs_l	0.00295	0.00555	0.00904	0.77008	0.77349

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	1.91019	2.48400
sky130_osu_sc_12T_ls__dffs_l	0.00000	1.83117	2.40498

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)	0.26527	1.35991	15.12150
	QN->Q (FR)	0.03242	0.81072	11.93390
	SN->Q (FR)	0.20074	1.43886	16.73990
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.26572	1.46471	14.47410
	QN->Q (FR)	0.03686	0.86979	11.62190
	SN->Q (FR)	0.20143	1.53823	16.05800

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)	0.38381	1.50976	15.65600
	QN->Q (RF)	0.02542	0.60806	8.96813
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.38817	1.62826	15.08380
	QN->Q (RF)	0.02725	0.61637	8.30542

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)	0.34653	0.90285	6.97053
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.34719	0.97140	7.00101

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)	0.22060	0.64746	4.91838
	SN->QN (FF)	0.15585	0.72706	6.53291
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.21486	0.66359	4.58866
	SN->QN (FF)	0.15034	0.73783	6.17436

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)	-0.06457	-0.07445	0.04945
	setup	CK (R)	0.19395	0.22235	3.17985
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.06648	-0.07428	0.04687
	setup	CK (R)	0.19390	0.22240	4.22944

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)	-0.14310	-0.32831	-0.06484
	setup	CK (R)	0.17884	0.34017	3.63627
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.14384	-0.32782	0.17879
	setup	CK (R)	0.17936	0.34017	3.63624

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)	-0.06457	-0.07445	0.04945
	setup	CK (R)	0.19395	0.22235	3.17985
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.06648	-0.07428	0.04687
	setup	CK (R)	0.19390	0.22240	4.22944

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)	-0.14310	-0.32831	-0.06484
	setup	CK (R)	0.17884	0.34017	3.63627
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.14384	-0.32782	0.17879
	setup	CK (R)	0.17936	0.34017	3.63624

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)	0.04854	0.07180	4.04254
	removal	CK (R)	-0.02772	-0.05731	-0.23992
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04875	0.07168	3.90112
	removal	CK (R)	-0.02772	-0.05731	-0.23992

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)	0.04854	0.07180	4.04254
	removal	CK (R)	-0.02772	-0.05731	-0.23992
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04875	0.07168	3.90112
	removal	CK (R)	-0.02772	-0.05731	-0.23992

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 ()	0.13706	0.44678	13.33370
	min_pulse_width	SN ()	0.14380	0.44678	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.13706	0.44678	13.33370
	min_pulse_width	SN ()	0.13370	0.44678	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 ()	0.12023	0.44678	13.33370
	min_pulse_width	CK ()	0.19093	0.44678	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.11350	0.44678	13.33370
	min_pulse_width	CK ()	0.18419	0.44678	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 ()	0.27172	0.44678	13.33370
	min_pulse_width	CK ()	0.15726	0.44678	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.27172	0.44678	13.33370
	min_pulse_width	CK ()	0.15726	0.44678	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	0.00848	0.00854	0.02523
	SN	-0.00106	-0.06094	-0.91014
	SN	0.01511	0.01487	0.02710
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00757	0.00796	0.03267
	SN	-0.00106	-0.04858	-0.62377
	SN	0.01716	0.01724	0.03437

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	0.00976	0.00928	0.01740
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00884	0.00882	0.02479

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	0.00975	0.00928	0.01720
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00884	0.00881	0.02464

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	0.00844	0.00851	0.02580
	SN	-0.00106	-0.06081	-0.90684
	SN	0.01508	0.01485	0.02700
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00753	0.00791	0.03207
	SN	-0.00106	-0.04871	-0.62648
	SN	0.01713	0.01719	0.03399

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	-0.00255	-0.00257	-0.00258
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01017	0.01045	0.04228
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00433	0.00466	0.03560
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00255	-0.00258	-0.00258
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01017	0.01045	0.04228
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00433	0.00466	0.03560

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	0.00270	0.00265	0.00260
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01624	0.01652	0.04829
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00815	0.00854	0.03964
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00270	0.00265	0.00260
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01624	0.01652	0.04829
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00815	0.00854	0.03964

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)	-0.00460	-0.00463	-0.00463
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00325	0.00361	0.03169
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)	-0.00460	-0.00463	-0.00463
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00325	0.00361	0.03169

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)	0.00472	0.00469	0.00468
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00985	0.01029	0.03843
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)	0.00472	0.00469	0.00467
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00985	0.01029	0.03843

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)	-0.00065	0.00011	0.04112
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00059	0.00024	0.04109
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00268	0.00428	0.07903
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00065	0.00011	0.04112
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00059	0.00024	0.04109
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00268	0.00428	0.07903

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)	0.02601	0.02677	0.07642
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01233	0.01365	0.05439
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02511	0.02719	0.09362
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01381	0.01495	0.05506
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01621	0.01860	0.09280
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02600	0.02677	0.07642
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01233	0.01365	0.05439
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02511	0.02719	0.09362
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01381	0.01495	0.05506
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01620	0.01860	0.09280

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00310	0.00892	1.01623
sky130_osu_sc_12T_ls__dff_l	0.00310	0.00892	0.72941

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	1.99256	2.18468
sky130_osu_sc_12T_ls__dff_l	0.00000	1.91353	2.10566

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)	0.22346	0.77074	6.65855
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.22334	0.84256	6.77675

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)	0.32175	0.72515	4.61040
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.32440	0.75979	4.48870

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)	-0.05932	-0.06862	0.04474
	setup	CK (R)	0.15410	0.18912	12.49190
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.05687	-0.06878	0.04082
	setup	CK (R)	0.15458	0.18850	8.59536

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)	-0.13209	-0.32840	1.14289
	setup	CK (R)	0.15945	0.33998	3.66018
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.13338	-0.32986	1.15406
	setup	CK (R)	0.15635	0.33998	3.66013

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 ()	0.10340	0.44678	13.33370
	min_pulse_width	CK ()	0.17073	0.44678	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.10003	0.44678	13.33370
	min_pulse_width	CK ()	0.16736	0.44678	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** ()	0.23132	0.44678	13.33370
	min_pulse_width	**CK** ()	0.12696	0.44678	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK** ()	0.23132	0.44678	13.33370
	min_pulse_width	**CK** ()	0.12696	0.44678	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	0.01780	0.01938	0.08318
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01597	0.01767	0.08177

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	0.01986	0.02045	0.06309
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01808	0.01866	0.06139

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	-0.00210	-0.00248	-0.00252
	!CK	0.00000	0.00000	0.00000
	!CK	0.00933	0.00963	0.04155
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00210	-0.00248	-0.00252
	!CK	0.00000	0.00000	0.00000
	!CK	0.00933	0.00963	0.04155

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	0.00253	0.00257	0.00255
	!CK	0.00000	0.00000	0.00000
	!CK	0.01682	0.01720	0.04949
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00253	0.00257	0.00255
	!CK	0.00000	0.00000	0.00000
	!CK	0.01682	0.01720	0.04949

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)	-0.00068	0.00008	0.04110
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00059	0.00025	0.04112
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00068	0.00008	0.04110
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00059	0.00025	0.04111

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)	0.01230	0.01360	0.05438
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02514	0.02595	0.07634
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02551	0.02782	0.09529
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01373	0.01487	0.05500
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01230	0.01360	0.05438
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02514	0.02595	0.07634
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02551	0.02781	0.09529
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01373	0.01487	0.05500

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00300	1.01241
sky130_osu_sc_12T_ls__inv_10	0.02696	10.03764
sky130_osu_sc_12T_ls__inv_2	0.00559	2.10001
sky130_osu_sc_12T_ls__inv_3	0.00828	3.08992
sky130_osu_sc_12T_ls__inv_4	0.01091	4.16051
sky130_osu_sc_12T_ls__inv_6	0.01633	6.20905
sky130_osu_sc_12T_ls__inv_8	0.02164	8.18198
sky130_osu_sc_12T_ls__inv_l	0.00233	0.69194

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.27137	0.30445
sky130_osu_sc_12T_ls__inv_10	0.00000	1.82894	1.89895
sky130_osu_sc_12T_ls__inv_2	0.00000	0.36579	0.37979
sky130_osu_sc_12T_ls__inv_3	0.00000	0.63716	0.65623
sky130_osu_sc_12T_ls__inv_4	0.00000	0.73157	0.75958
sky130_osu_sc_12T_ls__inv_6	0.00000	1.09736	1.13937
sky130_osu_sc_12T_ls__inv_8	0.00000	1.46315	1.51916
sky130_osu_sc_12T_ls__inv_l	0.00000	0.23186	0.31983

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)**	0.03143	0.74666	10.71670
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.03380	0.47481	10.62970
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.02318	0.62902	10.71450
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.02459	0.58493	10.73820
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.02405	0.55008	10.70720
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.02627	0.51439	10.71490
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.02972	0.49043	10.67280
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.03702	0.81381	10.61470

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)**	0.02381	0.54265	7.81492
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02849	0.33800	8.01598
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01865	0.47000	8.00633
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01985	0.43619	8.08232
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01935	0.40732	8.09426
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.02239	0.37526	8.12047
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02538	0.35379	8.09285
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02634	0.56099	7.33600

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	0.00422	0.00490	0.01248
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03476	0.04540	0.11791
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00728	0.00851	0.02357
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01118	0.01348	0.03552
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01424	0.01722	0.04684
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02112	0.02662	0.07053
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02794	0.03624	0.09396
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00326	0.00379	0.01068

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	-0.00075	-0.00018	0.00655
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01249	-0.00472	0.06179
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00242	-0.00124	0.01210
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00319	-0.00142	0.01849
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00494	-0.00235	0.02422
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00752	-0.00330	0.03609
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01012	-0.00396	0.04860
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00053	-0.00023	0.00522

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.32824	0.32834	0.00616	0.34067

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.71201	0.71201

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)	-	0.01425	0.25767	2.56750
	A1->Y (RR)	-	0.01661	0.26048	2.57092
	S0->Y (RR)	(!A0 * A1)	0.05005	0.31457	1.82668
	S0->Y (FR)	(A0 * !A1)	0.03407	0.40246	3.75937

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)	-	0.01614	0.27006	2.74790
	A1->Y (FF)	-	0.01421	0.26728	2.74247
	S0->Y (FF)	(!A0 * A1)	0.06786	0.38384	2.77731
	S0->Y (RF)	(A0 * !A1)	0.02602	0.31672	2.75490

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	-	-0.00409	-0.00410	-0.00409
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00269	-0.00270	-0.00269
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00526	0.00695	0.04844
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00270	-0.00139	0.03988

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	-	0.00410	0.00411	0.00410
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00271	0.00272	0.00271
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00073	0.00221	0.04375
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01130	0.01282	0.05361

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00097	-0.00097	-0.00097

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00098	0.00098	0.00098

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00116	-0.00117	-0.00116

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00117	0.00117	0.00117

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)	-0.00100	0.00030	0.04171
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00096	0.00028	0.04178

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)	0.00873	0.01025	0.05115
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00783	0.00952	0.05084

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00298	0.00298	0.96946
sky130_osu_sc_12T_ls__nand2_l	0.00228	0.00232	0.68900

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.23982	0.35178
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.21202	0.45410

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)	0.03316	0.73497	10.46630
	B->Y (FR)	0.03779	0.71477	10.06900
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.03782	0.81417	10.59600
	B->Y (FR)	0.04498	0.81952	10.58480

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)	0.03692	0.71479	9.99840
	B->Y (RF)	0.04165	0.67905	9.34500
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.03995	0.75268	9.57744
	B->Y (RF)	0.04444	0.71329	8.85961

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	0.00448	0.00475	0.01179
	B	0.00000	0.00000	0.00000
	B	0.00572	0.00625	0.01316
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00333	0.00378	0.00965
	B	0.00000	0.00000	0.00000
	B	0.00420	0.00461	0.01062

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	-0.00045	-0.00020	0.00584
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00031	0.00532
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00028	-0.00011	0.00451
	B	0.00000	0.00000	0.00000
	B	-0.00027	-0.00018	0.00417

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)	-0.00290	-0.00290	-0.00293
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00203	-0.00205	-0.00206

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)	0.00293	0.00297	0.00295
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00205	0.00209	0.00207

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)	-0.00272	-0.00273	-0.00272
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00193	-0.00195	-0.00193

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)	0.00283	0.00276	0.00274
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00200	0.00196	0.00194

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00294	0.00321	0.55140
sky130_osu_sc_12T_ls__nor2_l	0.00220	0.00242	0.38633

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.29669	0.37979
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.24951	0.31982

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)	0.07073	0.86254	9.97430
	B->Y (FR)	0.05438	0.87211	10.49840
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.07760	0.95488	9.99232
	B->Y (FR)	0.06407	0.96997	10.51580

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)	0.03266	0.45555	5.41085
	B->Y (RF)	0.02550	0.44362	5.39063
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.03367	0.46852	5.08607
	B->Y (RF)	0.02769	0.45740	5.06756

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	0.00613	0.00619	0.01448
	B	0.00000	0.00000	0.00000
	B	0.00460	0.00496	0.01475
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00439	0.00445	0.01162
	B	0.00000	0.00000	0.00000
	B	0.00342	0.00370	0.01225

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	0.00071	0.00093	0.01000
	B	0.00000	0.00000	0.00000
	B	-0.00057	-0.00005	0.00861
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00049	0.00067	0.00788
	B	0.00000	0.00000	0.00000
	B	-0.00035	0.00010	0.00683

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)	-0.00212	-0.00254	-0.00256
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00144	-0.00171	-0.00173

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)	0.00255	0.00257	0.00256
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00173	0.00174	0.00173

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)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00073	-0.00074	-0.00073

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)	0.00109	0.00110	0.00105
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00077	0.00078	0.00075

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00299	0.00309	0.00259	0.54087

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.38756	0.62427

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)	0.07761	0.89193	10.40390
	A1->Y (FR)	0.09678	0.88503	9.88360
	B0->Y (FR)	0.04826	0.74989	9.21640

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)	0.05012	0.55468	6.31428
	A1->Y (RF)	0.06197	0.55825	6.22858
	B0->Y (RF)	0.03884	0.59413	7.17081

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	0.00648	0.00689	0.01524
	A1	0.00000	0.00000	0.00000
	A1	0.00805	0.00804	0.01551
	B0	0.00538	0.00559	0.01376

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	0.00039	0.00732
	A1	0.00000	0.00000	0.00000
	A1	0.00154	0.00148	0.00859
	B0	0.00060	0.00086	0.00759

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)	-0.00103	-0.00104	-0.00104
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00256	-0.00260	-0.00258
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00263	-0.00264	-0.00263

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)	0.00109	0.00111	0.00106
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00256	0.00260	0.00258
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00271	0.00267	0.00264

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)	-0.00205	-0.00246	-0.00248
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00254	-0.00256	-0.00256
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00259	-0.00261	-0.00260

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)	0.00246	0.00249	0.00248
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00254	0.00256	0.00256
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00268	0.00263	0.00261

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)	-0.00212	-0.00213	-0.00218

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)	0.00218	0.00223	0.00219

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00282	0.00294	0.00312	0.00308	0.56940

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.34491	0.51975

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)	0.10298	0.88576	9.96075
	A1->Y (FR)	0.08736	0.89758	10.50370
	B0->Y (FR)	0.05967	0.87196	10.47750
	B1->Y (FR)	0.07672	0.86102	9.93748

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)	0.08490	0.60793	6.60846
	A1->Y (RF)	0.06805	0.58795	6.56250
	B0->Y (RF)	0.05816	0.62545	7.43750
	B1->Y (RF)	0.07567	0.65042	7.50189

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	0.01041	0.01043	0.01761
	A1	0.00886	0.00925	0.01741
	B0	0.00483	0.00535	0.01410
	B1	0.00649	0.00651	0.01402

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00247	0.00241	0.00942
	A1	-0.00011	0.00001	0.00692
	B0	-0.00016	0.00031	0.00814
	B1	0.00107	0.00118	0.00922

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)	-0.00209	-0.00249	-0.00251
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00209	-0.00249	-0.00250
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00248	-0.00250	-0.00249
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00253	-0.00253	-0.00252

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)	0.00250	0.00251	0.00251
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00250	0.00251	0.00251
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00248	0.00250	0.00249
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00262	0.00257	0.00254

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)	-0.00100	-0.00102	-0.00101
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00100	-0.00102	-0.00101
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00247	-0.00249	-0.00248
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00251	-0.00253	-0.00252

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)	0.00106	0.00107	0.00103
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00106	0.00107	0.00103
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00247	0.00249	0.00248
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00263	0.00257	0.00253

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)	-0.00101	-0.00104	-0.00102
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00101	-0.00104	-0.00102
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00286	-0.00289	-0.00288
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00282	-0.00284	-0.00290

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)	0.00107	0.00109	0.00104
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00107	0.00108	0.00104
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00291	0.00293	0.00288
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00291	0.00297	0.00292

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)	-0.00207	-0.00247	-0.00249
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00207	-0.00247	-0.00249
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00290	-0.00294	-0.00294
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00286	-0.00287	-0.00295

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)	0.00248	0.00249	0.00249
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00248	0.00250	0.00249
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00296	0.00298	0.00294
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00296	0.00300	0.00297

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00329	0.00306	1.05859
sky130_osu_sc_12T_ls__or2_2	0.00330	0.00306	2.14547
sky130_osu_sc_12T_ls__or2_4	0.00330	0.00306	4.25184
sky130_osu_sc_12T_ls__or2_8	0.00330	0.00307	8.33792
sky130_osu_sc_12T_ls__or2_l	0.00245	0.00231	0.72230

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.55568	0.68424
sky130_osu_sc_12T_ls__or2_2	0.00000	0.67364	0.73158
sky130_osu_sc_12T_ls__or2_4	0.00000	1.04643	1.08338
sky130_osu_sc_12T_ls__or2_8	0.00000	1.79202	1.83185
sky130_osu_sc_12T_ls__or2_l	0.00000	0.44178	0.53362

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)	0.07909	0.63515	6.69129
	B->Y (RR)	0.06812	0.60123	6.50965
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.08394	0.54718	6.64652
	B->Y (RR)	0.07253	0.51754	6.48281
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.10729	0.53278	6.88575
	B->Y (RR)	0.09557	0.50872	6.73275
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.15413	0.57786	7.23894
	B->Y (RR)	0.14202	0.55891	7.11126
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.08360	0.69153	6.43428
	B->Y (RR)	0.07371	0.66053	6.28449

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)	0.13258	0.62423	6.11572
	B->Y (FF)	0.10989	0.62312	6.28551
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.15747	0.61422	6.36041
	B->Y (FF)	0.13514	0.62075	6.54212
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.22343	0.67169	6.72327
	B->Y (FF)	0.20118	0.68416	6.91227
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.35979	0.81515	7.14585
	B->Y (FF)	0.33755	0.82714	7.36566
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.14123	0.66023	5.92592
	B->Y (FF)	0.11979	0.66356	6.09920

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	0.00464	0.00525	0.03107
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00453	0.03112
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00772	0.00853	0.03467
	B	0.00000	0.00000	0.00000
	B	0.00643	0.00777	0.03467
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01484	0.01596	0.04252
	B	0.00000	0.00000	0.00000
	B	0.01345	0.01533	0.04176
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03052	0.03093	0.05789
	B	0.00000	0.00000	0.00000
	B	0.02904	0.03030	0.05809
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00347	0.00405	0.02555
	B	0.00000	0.00000	0.00000
	B	0.00263	0.00352	0.02613

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	0.01019	0.01033	0.03758
	B	0.00000	0.00000	0.00000
	B	0.00831	0.00980	0.04235
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01289	0.01297	0.03977
	B	0.00000	0.00000	0.00000
	B	0.01098	0.01236	0.04398
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.02076	0.01954	0.04534
	B	0.00000	0.00000	0.00000
	B	0.01891	0.01899	0.04866
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.04356	0.03375	0.05737
	B	0.00000	0.00000	0.00000
	B	0.04170	0.03344	0.05953
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00749	0.00776	0.03001
	B	0.00000	0.00000	0.00000
	B	0.00623	0.00747	0.03326

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)	-0.00215	-0.00256	-0.00258
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00215	-0.00256	-0.00258
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00215	-0.00256	-0.00257
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00214	-0.00255	-0.00257
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00144	-0.00172	-0.00174

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)	0.00256	0.00257	0.00258
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00256	0.00258	0.00258
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00257	0.00260	0.00259
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00257	0.00261	0.00259
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00174	0.00174	0.00174

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)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00102	-0.00103	-0.00102
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00071	-0.00072	-0.00071

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)	0.00110	0.00111	0.00106
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00110	0.00111	0.00106
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00110	0.00112	0.00107
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00112	0.00107
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00076	0.00077	0.00073

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00319	0.00415	0.58055
sky130_osu_sc_12T_ls__tbufi_l	0.00243	0.00315	0.38287

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.45340	0.60889
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.35889	0.63965

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)	0.05064	0.86926	10.59490
	OE->Y (FR)	0.05310	0.33665	5.09331
	OE->Y (RR)	0.08965	0.72833	6.66623
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.06201	0.96192	10.43570
	OE->Y (FR)	0.05475	0.33661	5.09324
	OE->Y (RR)	0.09818	0.81318	6.39279

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)	0.03620	0.58577	7.21901
	OE->Y (FF)	0.05434	0.33666	5.09332
	OE->Y (RF)	0.03255	0.53961	6.45566
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.03966	0.59427	6.57545
	OE->Y (FF)	0.05582	0.33661	5.09323
	OE->Y (RF)	0.03549	0.54502	5.76123

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	0.00433	0.00481	0.01295
	OE	0.00000	0.00000	0.00000
	OE	0.00444	0.00582	0.04403
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00325	0.00361	0.01084
	OE	0.00000	0.00000	0.00000
	OE	0.00320	0.00432	0.03538

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	-0.00057	-0.00016	0.00709
	OE	0.00000	0.00000	0.00000
	OE	0.00266	0.00408	0.04629
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00033	-0.00001	0.00577
	OE	0.00000	0.00000	0.00000
	OE	0.00187	0.00300	0.03610

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)	-0.00193	-0.00195	-0.00194
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00164	-0.00167	-0.00164
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00139	-0.00140	-0.00140
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00120	-0.00122	-0.00120

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)	0.00193	0.00195	0.00194
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00168	0.00170	0.00166
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00139	0.00140	0.00140
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00123	0.00123	0.00121

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)	0.00164	0.00313	0.04552
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00141	0.00295	0.04527
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00114	0.00235	0.03554
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00096	0.00217	0.03534

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)	0.00515	0.00676	0.04862
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00525	0.00685	0.04872
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00384	0.00524	0.03805
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00391	0.00531	0.03813

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00318	0.00480	0.56932
sky130_osu_sc_12T_ls__tnbufi_l	0.00232	0.00360	0.38409

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.47545	0.54273
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.41754	0.46861

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)	0.05114	0.86211	10.46410
	OE->Y (RR)	0.03098	0.33690	5.09354
	OE->Y (FR)	0.06305	0.84526	9.83928
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.06098	0.95852	10.45400
	OE->Y (RR)	0.03317	0.33662	5.09332
	OE->Y (FR)	0.07114	0.94568	9.81509

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)	0.03550	0.58121	7.13126
	OE->Y (RF)	0.03078	0.33691	5.09356
	OE->Y (FF)	0.06197	0.53550	5.10223
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.03796	0.59336	6.58776
	OE->Y (RF)	0.03270	0.33663	5.09333
	OE->Y (FF)	0.06786	0.56985	4.86020

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	0.00448	0.00496	0.01320
	OE	0.00000	0.00000	0.00000
	OE	0.01085	0.01282	0.05499
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00332	0.00353	0.01091
	OE	0.00000	0.00000	0.00000
	OE	0.00810	0.00965	0.04281

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00076	-0.00034	0.00700
	OE	0.00000	0.00000	0.00000
	OE	0.00923	0.01120	0.04967
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00054	-0.00019	0.00558
	OE	0.00000	0.00000	0.00000
	OE	0.00692	0.00847	0.03948

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)	-0.00159	-0.00160	-0.00159
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00132	-0.00135	-0.00132
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00109	-0.00110	-0.00109
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00092	-0.00092	-0.00091

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)	0.00159	0.00160	0.00159
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00136	0.00137	0.00134
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00109	0.00110	0.00109
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00094	0.00094	0.00093

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)	-0.00284	-0.00160	0.04106
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00282	-0.00154	0.04109
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00194	-0.00095	0.03238
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00194	-0.00093	0.03240

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)	0.00801	0.01013	0.05269
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00792	0.01021	0.05262
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00607	0.00771	0.04097
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00600	0.00778	0.04094

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00638	0.00551	0.58786

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.94273	1.02245

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	0.11386	0.76136	6.72720
	A->Y (FR)	!B	0.06884	0.88196	10.58000
	B->Y (RR)	A	0.09172	0.74216	6.78637
	B->Y (FR)	!A	0.08552	0.86993	10.04840

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	0.11005	0.62575	5.49335
	A->Y (RF)	!B	0.04854	0.55852	6.58879
	B->Y (FF)	A	0.09354	0.61051	5.48633
	B->Y (RF)	!A	0.06073	0.57341	6.60093

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	0.00478	0.00592	0.04534
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01090	0.01292	0.06309
	B	A	0.00000	0.00000	0.00000
	B	A	0.00179	0.00336	0.04628
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01180	0.01351	0.06214

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	0.01293	0.01419	0.05562
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00293	0.00443	0.05336
	B	A	0.00000	0.00000	0.00000
	B	A	0.01171	0.01358	0.05580
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00375	0.00516	0.05394

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.00640	0.00555	0.55441

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.94273	0.98287

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	0.11561	0.76668	6.73090
	A->Y (FR)	B	0.08811	0.88099	10.04590
	B->Y (RR)	!A	0.09640	0.75676	6.73685
	B->Y (FR)	A	0.09601	0.88938	10.04250

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	0.10026	0.60573	5.18257
	A->Y (RF)	B	0.05360	0.59884	7.02794
	B->Y (FF)	!A	0.09642	0.60576	5.29141
	B->Y (RF)	A	0.05924	0.56177	6.33638

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	0.01276	0.01436	0.06181
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00265	0.00329	0.04447
	B	A	0.00000	0.00000	0.00000
	B	A	0.01306	0.01471	0.06180
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00172	0.00313	0.04511

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	0.00243	0.00366	0.05193
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01340	0.01506	0.05241
	B	A	0.00000	0.00000	0.00000
	B	A	0.00249	0.00373	0.05096
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01188	0.01375	0.05502

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80,
Temp 150.00

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	0.35558
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	148679.00000	297357.00000
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
	-0.00166	0.03841	0.58296

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
	2.58861	2.46773	0.69801