sky130_osu_sc_12T_ls_tt_1P89_25C.ccs Library

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

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addf_1	31.25760
sky130_osu_sc_12T_ls__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_ls__addf_1	0.01141	0.01146	0.00880	1.17630	0.52504	1.04073
sky130_osu_sc_12T_ls__addf_l	0.01140	0.01146	0.00882	0.79537	0.52648	1.04073

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.02590	0.03259
sky130_osu_sc_12T_ls__addf_l	0.00000	0.02121	0.03237

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)	0.14346	1.58176	22.44280
	B->CO (RR)	0.13885	1.55026	22.07710
	CI->CO (RR)	0.13548	1.61497	23.13030
	CON->CO (FR)	0.02798	0.76814	11.74800
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.14534	1.48146	18.26390
	B->CO (RR)	0.14083	1.46222	18.24690
	CI->CO (RR)	0.13734	1.51566	18.99570
	CON->CO (FR)	0.03328	0.83611	11.59470

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)	0.23209	2.17506	30.30660
	B->CO (FF)	0.20706	2.07765	29.12980
	CI->CO (FF)	0.20446	2.16674	30.75140
	CON->CO (RF)	0.01961	0.50528	7.71900
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.22650	1.92853	23.34610
	B->CO (FF)	0.20232	1.84745	22.55150
	CI->CO (FF)	0.19884	1.91997	23.81490
	CON->CO (RF)	0.02201	0.52377	7.35936

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)	0.19166	1.04850	10.99290
	B->CON (FR)	0.16554	0.97675	10.78660
	CI->CON (FR)	0.16403	1.04112	11.48230
sky130_osu_sc_12T_ls__addf_1	A->CON (FR)	0.18137	1.03957	11.00220
	B->CON (FR)	0.15634	0.96877	10.79490
	CI->CON (FR)	0.15372	1.03227	11.49160

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)	0.08363	0.51443	5.53948
	B->CON (RF)	0.08093	0.53454	5.93963
	CI->CON (RF)	0.07567	0.55049	6.25363
sky130_osu_sc_12T_ls__addf_1	A->CON (RF)	0.08083	0.51203	5.54608
	B->CON (RF)	0.07827	0.53239	5.94638
	CI->CON (RF)	0.07286	0.54818	6.26067

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)	0.33609	2.04433	24.02080
	B->S (-R)	0.33888	2.02576	23.38220
	CI->S (-R)	0.30649	2.03243	24.47140
	CON->S (RR)	0.08367	0.66601	6.87217
sky130_osu_sc_12T_ls__addf_1	A->S (-R)	0.32326	2.03462	24.01280
	B->S (-R)	0.32637	2.01649	23.37410
	CI->S (-R)	0.29369	2.02277	24.46170
	CON->S (RR)	0.08371	0.66598	6.87177

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)	0.24627	1.33287	14.43970
	B->S (-F)	0.24366	1.29380	14.38450
	CI->S (-F)	0.23794	1.36290	15.14070
	CON->S (FF)	0.10724	0.63585	5.98871
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.24007	1.32847	14.43580
	B->S (-F)	0.23782	1.28994	14.38070
	CI->S (-F)	0.23173	1.35859	15.13680
	CON->S (FF)	0.10726	0.63576	5.99370

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	0.00292	0.00817
	B	0.00391	0.00403	0.00845
	CI	0.00404	0.00436	0.00973
sky130_osu_sc_12T_ls__addf_l	A	0.00286	0.00275	0.00589
	B	0.00358	0.00363	0.00682
	CI	0.00371	0.00394	0.00765

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01017	0.01088	0.02435
	B	0.01060	0.01122	0.02306
	CI	0.00860	0.00931	0.02312
sky130_osu_sc_12T_ls__addf_l	A	0.00990	0.01036	0.01911
	B	0.01032	0.01075	0.01822
	CI	0.00834	0.00887	0.01777

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01016	0.01050	0.01645
	B	0.01059	0.01092	0.01600
	CI	0.00860	0.00898	0.01535
sky130_osu_sc_12T_ls__addf_l	A	0.00990	0.01020	0.01590
	B	0.01031	0.01061	0.01547
	CI	0.00833	0.00869	0.01480

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00315	0.00302	0.00539
	B	0.00388	0.00392	0.00670
	CI	0.00403	0.00424	0.00737
sky130_osu_sc_12T_ls__addf_l	A	0.00283	0.00268	0.00501
	B	0.00356	0.00358	0.00612
	CI	0.00370	0.00390	0.00699

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01017	0.01084	0.02274
	B	0.01059	0.01117	0.02155
	CI	0.00860	0.00927	0.02144
sky130_osu_sc_12T_ls__addf_l	A	0.00990	0.01052	0.02186
	B	0.01032	0.01086	0.02075
	CI	0.00834	0.00895	0.02059

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.02227	0.02223	0.03145
	B	0.02020	0.01978	0.03090
	CI	0.01826	0.01801	0.02692
sky130_osu_sc_12T_ls__addf_l	A	0.02225	0.02224	0.03146
	B	0.02019	0.01978	0.03090
	CI	0.01829	0.01801	0.02692

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addh_1	18.55920
sky130_osu_sc_12T_ls__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ls__addh_1	0.00560	0.00590	1.12606	1.15556	1.17079
sky130_osu_sc_12T_ls__addh_l	0.00559	0.00590	0.79895	1.15321	0.80730

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.02834	0.03169
sky130_osu_sc_12T_ls__addh_l	0.00000	0.01895	0.02230

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)	0.09862	0.66377	6.73521
	B->CO (RR)	0.10142	0.65772	6.77264
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.09941	0.72531	6.75423
	B->CO (RR)	0.10215	0.71941	6.78712

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)	0.09082	0.61631	6.26659
	B->CO (FF)	0.09606	0.63193	6.32834
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.08943	0.64184	6.15752
	B->CO (FF)	0.09453	0.65784	6.22414

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)	0.14325	0.68875	6.71460
	B->CON (RR)	0.14588	0.68115	6.75202
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.13231	0.67149	6.65918
	B->CON (RR)	0.13497	0.66473	6.69277

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)	0.12023	0.63835	6.35654
	B->CON (FF)	0.11904	0.64803	6.40743
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.11145	0.61822	6.21604
	B->CON (FF)	0.11041	0.62811	6.27752

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)	0.16911	1.36984	16.98910
	B->S (FR)	0.16806	1.37922	17.08000
	CON->S (FR)	0.02975	0.77663	11.86680
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.16354	1.31616	14.37450
	B->S (FR)	0.16248	1.32596	14.42850
	CON->S (FR)	0.03403	0.84172	11.73390

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)	0.17763	1.25322	14.94010
	B->S (RF)	0.18024	1.24488	14.97620
	CON->S (RF)	0.01922	0.50383	7.73077
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.16921	1.13639	11.48940
	B->S (RF)	0.17185	1.12874	11.52030
	CON->S (RF)	0.02151	0.53044	7.46123

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	0.00515	0.00504	0.01136
	B	0.00000	0.00000	0.00000
	B	0.00468	0.00449	0.01075
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00453	0.00437	0.00939
	B	0.00000	0.00000	0.00000
	B	0.00406	0.00383	0.00876

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	0.00727	0.00711	0.01199
	B	0.00000	0.00000	0.00000
	B	0.00763	0.00781	0.01291
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00664	0.00649	0.01154
	B	0.00000	0.00000	0.00000
	B	0.00702	0.00713	0.01226

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	0.00514	0.00504	0.00977
	B	0.00000	0.00000	0.00000
	B	0.00468	0.00449	0.01074
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00453	0.00437	0.00935
	B	0.00000	0.00000	0.00000
	B	0.00406	0.00383	0.00870

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	0.00726	0.00711	0.01211
	B	0.00000	0.00000	0.00000
	B	0.00764	0.00780	0.01295
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00664	0.00647	0.01137
	B	0.00000	0.00000	0.00000
	B	0.00702	0.00713	0.01212

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	0.00727	0.00712	0.01131
	B	0.00000	0.00000	0.00000
	B	0.00764	0.00781	0.01265
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00665	0.00650	0.01173
	B	0.00000	0.00000	0.00000
	B	0.00702	0.00714	0.01231

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	0.00515	0.00504	0.00995
	B	0.00000	0.00000	0.00000
	B	0.00468	0.00449	0.00948
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00453	0.00437	0.00942
	B	0.00000	0.00000	0.00000
	B	0.00407	0.00383	0.00882

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)	1.36563	1.30529	0.38196
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.36572	1.30539	0.38206

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)	1.36560	1.30629	0.41183
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.36570	1.30639	0.41193

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	**B**	**Y**
0	**x**	**0**
1	**0**	**0**
1	**1**	**1**

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__and2_1	8.30280
sky130_osu_sc_12T_ls__and2_2	10.25640
sky130_osu_sc_12T_ls__and2_4	14.16360
sky130_osu_sc_12T_ls__and2_6	18.07080
sky130_osu_sc_12T_ls__and2_8	21.97800
sky130_osu_sc_12T_ls__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	**B**	**Y**
sky130_osu_sc_12T_ls__and2_1	0.00300	0.00310	1.13669
sky130_osu_sc_12T_ls__and2_2	0.00300	0.00311	2.26438
sky130_osu_sc_12T_ls__and2_4	0.00300	0.00311	4.36717
sky130_osu_sc_12T_ls__and2_6	0.00303	0.00310	6.46644
sky130_osu_sc_12T_ls__and2_8	0.00300	0.00311	8.46652
sky130_osu_sc_12T_ls__and2_l	0.00227	0.00234	0.79801

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.01312	0.02089
sky130_osu_sc_12T_ls__and2_2	0.00000	0.02091	0.02130
sky130_osu_sc_12T_ls__and2_4	0.00000	0.03647	0.04138
sky130_osu_sc_12T_ls__and2_6	0.00000	0.05204	0.06186
sky130_osu_sc_12T_ls__and2_8	0.00000	0.06761	0.08234
sky130_osu_sc_12T_ls__and2_l	0.00000	0.00151	0.00234

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)	0.07558	0.60408	6.58566
	B->Y (RR)	0.08001	0.60474	6.54716
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.08426	0.53635	6.67697
	B->Y (RR)	0.08866	0.53198	6.63446
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.11445	0.53725	6.89488
	B->Y (RR)	0.11875	0.52480	6.84419
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.14466	0.56729	7.12122
	B->Y (RR)	0.14893	0.54868	7.06201
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.17394	0.60095	7.31396
	B->Y (RR)	0.17834	0.57990	7.24186
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.08165	0.67221	6.57262
	B->Y (RR)	0.08598	0.67062	6.51498

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)	0.07166	0.55139	5.78669
	B->Y (FF)	0.07437	0.56356	5.86225
sky130_osu_sc_12T_ls__and2_2	A->Y (FF)	0.08398	0.53635	5.97921
	B->Y (FF)	0.08602	0.54407	6.03470
sky130_osu_sc_12T_ls__and2_4	A->Y (FF)	0.11840	0.56922	6.26928
	B->Y (FF)	0.11797	0.57120	6.30486
sky130_osu_sc_12T_ls__and2_6	A->Y (FF)	0.15476	0.61508	6.52107
	B->Y (FF)	0.15171	0.61102	6.54400
sky130_osu_sc_12T_ls__and2_8	A->Y (FF)	0.18888	0.65216	6.68102
	B->Y (FF)	0.18364	0.64735	6.69243
sky130_osu_sc_12T_ls__and2_l	A->Y (FF)	0.07250	0.57962	5.68323
	B->Y (FF)	0.07869	0.59704	5.76296

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	0.00353	0.00348	0.02034
	B	0.00000	0.00000	0.00000
	B	0.00359	0.00320	0.01482
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00671	0.00687	0.02313
	B	0.00000	0.00000	0.00000
	B	0.00677	0.00666	0.01812
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01394	0.01452	0.03005
	B	0.00000	0.00000	0.00000
	B	0.01399	0.01459	0.02553
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02144	0.02215	0.03740
	B	0.00000	0.00000	0.00000
	B	0.02153	0.02208	0.03345
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02914	0.02991	0.04510
	B	0.00000	0.00000	0.00000
	B	0.02916	0.02959	0.04190
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00270	0.00283	0.01748
	B	0.00000	0.00000	0.00000
	B	0.00275	0.00257	0.01337

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	0.00901	0.00951	0.02348
	B	0.00000	0.00000	0.00000
	B	0.01021	0.01044	0.02377
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.01141	0.01232	0.02622
	B	0.00000	0.00000	0.00000
	B	0.01264	0.01317	0.02650
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01755	0.01904	0.03289
	B	0.00000	0.00000	0.00000
	B	0.01874	0.01978	0.03298
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.02431	0.02572	0.03969
	B	0.00000	0.00000	0.00000
	B	0.02537	0.02672	0.03969
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.03109	0.03307	0.04651
	B	0.00000	0.00000	0.00000
	B	0.03207	0.03316	0.04595
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00680	0.00725	0.02004
	B	0.00000	0.00000	0.00000
	B	0.00765	0.00796	0.02017

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)	-0.00317	-0.00319	-0.00320
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00317	-0.00319	-0.00320
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00317	-0.00318	-0.00320
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00320	-0.00322	-0.00323
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00317	-0.00319	-0.00320
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00223	-0.00224	-0.00224

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)	0.00320	0.00324	0.00321
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00319	0.00324	0.00321
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00319	0.00324	0.00321
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00322	0.00327	0.00324
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00319	0.00323	0.00321
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00224	0.00227	0.00225

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)	-0.00303	-0.00305	-0.00303
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00303	-0.00305	-0.00303
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00303	-0.00305	-0.00303
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00303	-0.00304	-0.00303
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00303	-0.00304	-0.00303
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00213	-0.00214	-0.00214

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)	0.00307	0.00306	0.00304
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00308	0.00307	0.00304
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00308	0.00307	0.00304
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00308	0.00308	0.00304
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00308	0.00308	0.00304
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00216	0.00217	0.00214

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	x	0	1
x	x	1	0
1	0	0	1
1	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__aoi21_l	0.00274	0.00292	0.00288	0.49874

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.00540	0.01024

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)	0.09664	0.96522	10.83480
	A1->Y (FR)	0.07677	0.88204	10.20680
	B0->Y (FR)	0.07409	0.96779	11.43410

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)	0.04269	0.45829	5.25044
	A1->Y (RF)	0.03925	0.48407	5.71033
	B0->Y (RF)	0.02678	0.45569	5.54897

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	0.00772	0.00759	0.00928
	A1	0.00000	0.00000	0.00000
	A1	0.00651	0.00635	0.00801
	B0	0.00475	0.00486	0.00749

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	0.00141	0.00116	0.00311
	A1	0.00000	0.00000	0.00000
	A1	0.00146	0.00126	0.00379
	B0	-0.00067	-0.00051	0.00179

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)	-0.00243	-0.00265	-0.00262
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00266	-0.00267	-0.00267
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00267	-0.00268	-0.00267

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)	0.00262	0.00265	0.00262
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00266	0.00270	0.00267
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00271	0.00270	0.00268

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)	-0.00243	-0.00262	-0.00263
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00266	-0.00268	-0.00267
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00292	-0.00294	-0.00294

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)	0.00262	0.00262	0.00263
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00266	0.00271	0.00268
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00293	0.00300	0.00295

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)	-0.00118	-0.00119	-0.00118

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)	0.00129	0.00129	0.00120

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	x	0	x	1
0	x	1	0	1
x	x	1	1	0
1	0	0	x	1
1	0	1	0	1
1	1	x	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_l	0.00274	0.00292	0.00306	0.00287	0.49180

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_l	0.00000	0.00691	0.02048

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)	0.12386	0.99503	10.81080
	A1->Y (FR)	0.11014	0.97560	10.75170
	B0->Y (FR)	0.07877	0.96676	11.34290
	B1->Y (FR)	0.09303	0.98453	11.41770

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)	0.05622	0.47198	5.22332
	A1->Y (RF)	0.05272	0.49721	5.68123
	B0->Y (RF)	0.03036	0.46984	5.64680
	B1->Y (RF)	0.03431	0.44473	5.19234

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	0.00942	0.00929	0.01084
	A1	0.00821	0.00804	0.00959
	B0	0.00518	0.00513	0.00760
	B1	0.00781	0.00777	0.01044

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00296	0.00271	0.00471
	A1	0.00301	0.00289	0.00538
	B0	-0.00040	-0.00037	0.00223
	B1	-0.00034	-0.00042	0.00160

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)	-0.00249	-0.00262	-0.00262
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00266	-0.00267	-0.00267
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00266	-0.00268	-0.00267
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00266	-0.00268	-0.00267

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)	0.00261	0.00263	0.00262
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00266	0.00269	0.00267
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00271	0.00270	0.00267
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00271	0.00270	0.00267

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)	-0.00249	-0.00263	-0.00262
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00267	-0.00268	-0.00267
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00291	-0.00293	-0.00293
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00291	-0.00293	-0.00293

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)	0.00262	0.00264	0.00262
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00267	0.00271	0.00268
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00292	0.00299	0.00294
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00292	0.00299	0.00294

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)	-0.00117	-0.00118	-0.00117
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00116	-0.00118	-0.00117
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00304	-0.00306	-0.00306
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00304	-0.00306	-0.00306

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)	0.00133	0.00134	0.00121
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00116	0.00118	0.00117
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00305	0.00307	0.00307
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00305	0.00307	0.00307

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)	-0.00119	-0.00120	-0.00119
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00118	-0.00119	-0.00118
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00280	-0.00281	-0.00281
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00280	-0.00281	-0.00281

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)	0.00135	0.00135	0.00123
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00118	0.00119	0.00118
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00285	0.00283	0.00281
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00285	0.00283	0.00281

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__buf_1	0.00311	1.05481
sky130_osu_sc_12T_ls__buf_2	0.00311	2.18212
sky130_osu_sc_12T_ls__buf_4	0.00311	4.31773
sky130_osu_sc_12T_ls__buf_6	0.00085	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00312	8.52229
sky130_osu_sc_12T_ls__buf_l	0.00231	0.79864

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.01065	0.01065
sky130_osu_sc_12T_ls__buf_2	0.00000	0.01598	0.02089
sky130_osu_sc_12T_ls__buf_4	0.00000	0.02663	0.04138
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.04794	0.08234
sky130_osu_sc_12T_ls__buf_l	0.00000	0.00127	0.00127

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)**	0.05955	0.58283	6.35958
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.06251	0.49685	6.43418
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.08305	0.48109	6.68931
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.12384	0.52204	7.09873
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.06325	0.63723	6.37908

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)**	0.06711	0.52986	5.48015
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.07954	0.52356	5.84362
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.11386	0.56195	6.22446
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.18365	0.64758	6.70069
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.06998	0.57406	5.70374

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	0.00334	0.00325	0.01601
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00649	0.00662	0.01970
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01364	0.01424	0.02724
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02819	0.02940	0.04305
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00256	0.00265	0.01579

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	0.00870	0.00901	0.02228
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.01108	0.01163	0.02481
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01720	0.01814	0.03110
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.03086	0.03140	0.04397
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00669	0.00721	0.02010

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
	-0.00072	-0.00073	-0.00070

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
	0.00072	0.00073	0.00070

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT			OUTPUT	
D	RN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	0	1
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffr_1	42.49080
sky130_osu_sc_12T_ls__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ls__dffr_1	0.00286	0.00287	0.00894	1.13158	1.12180
sky130_osu_sc_12T_ls__dffr_l	0.00286	0.00287	0.00894	0.79789	0.79402

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.03300	0.05334
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.02361	0.04395

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)	0.31689	1.32703	13.73050
	QN->Q (FR)	0.03221	0.84208	12.77090
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.31181	1.43094	13.49380
	QN->Q (FR)	0.03575	0.88695	12.35640

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)	0.31322	1.35437	14.44830
	QN->Q (RF)	0.02135	0.54760	8.33216
	RN->Q (FF)	0.23411	1.42993	16.69430
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.31809	1.48330	14.24940
	QN->Q (RF)	0.02319	0.56537	7.94729
	RN->Q (FF)	0.23925	1.55869	16.49160

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)	0.28261	0.81874	6.65614
	RN->QN (FR)	0.20267	0.89424	8.90231
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.28320	0.88315	6.65094
	RN->QN (FR)	0.20422	0.95821	8.89075

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)**	0.26750	0.63607	3.74298
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.25773	0.65276	3.66084

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)	-0.06376	-0.07540	-0.10194
	setup	CK (R)	0.24366	0.26947	1.02030
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.06394	-0.07540	-0.10194
	setup	CK (R)	0.24157	0.26848	1.01248

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)	-0.13366	-0.35115	-4.04073
	setup	CK (R)	0.15897	0.36384	4.11788
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.13575	-0.35262	-4.04353
	setup	CK (R)	0.15883	0.36384	4.11788

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)	-0.06376	-0.07540	-0.10194
	setup	CK (R)	0.24366	0.26947	1.02030
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.06394	-0.07540	-0.10194
	setup	CK (R)	0.24157	0.26848	1.01248

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)	-0.13366	-0.35115	-4.04073
	setup	CK (R)	0.15897	0.36384	4.11788
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.13575	-0.35262	-4.04353
	setup	CK (R)	0.15883	0.36384	4.11788

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)	0.21308	0.24143	1.15455
	removal	CK (R)	-0.04817	-0.05722	-0.10462
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.21459	0.24134	1.14725
	removal	CK (R)	-0.04817	-0.05722	-0.10462

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)	0.21308	0.24143	1.15455
	removal	CK (R)	-0.04817	-0.05722	-0.10462
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.21459	0.24134	1.14725
	removal	CK (R)	-0.04817	-0.05722	-0.10462

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 ()	0.14641	0.41870	13.33370
	min_pulse_width	RN ()	0.14324	0.41870	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.14324	0.41870	13.33370
	min_pulse_width	RN ()	0.14008	0.41870	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 ()	0.14641	0.41870	13.33370
	min_pulse_width	CK ()	0.15907	0.41870	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.13691	0.41870	13.33370
	min_pulse_width	CK ()	0.15591	0.41870	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 ()	0.32055	0.41870	13.33370
	min_pulse_width	CK ()	0.13058	0.41870	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.32055	0.41870	13.33370
	min_pulse_width	CK ()	0.13058	0.41870	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	0.00870	0.00710	0.00005
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00776	0.00664	0.01021

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	0.01013	0.00875	0.00102
	RN	-0.00114	-0.06691	-1.01053
	RN	0.02306	0.02198	0.01394
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00919	0.00826	0.00914
	RN	-0.00114	-0.05426	-0.71253
	RN	0.02211	0.02149	0.02198

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	0.01013	0.00875	0.00111
	RN	-0.00114	-0.06657	-1.00180
	RN	0.02306	0.02200	0.01405
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00919	0.00827	0.00915
	RN	-0.00114	-0.05410	-0.70908
	RN	0.02211	0.02148	0.02204

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	0.00867	0.00710	0.00033
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00773	0.00663	0.01002

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	-0.00232	-0.00265	-0.00265
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01096	0.01048	0.02247
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00441	0.00402	0.01608
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00232	-0.00265	-0.00265
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01096	0.01048	0.02247
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00441	0.00402	0.01608

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	0.00263	0.00267	0.00265
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01705	0.01676	0.02875
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00832	0.00809	0.01970
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00263	0.00267	0.00265
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01705	0.01676	0.02875
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00832	0.00809	0.01970

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)	0.00338	0.00322	0.02090
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01024	0.00980	0.02766
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)	0.00338	0.00322	0.02090
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01024	0.00980	0.02766

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)	0.00872	0.00911	0.02600
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01752	0.01741	0.03437
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)	0.00872	0.00911	0.02600
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01752	0.01741	0.03437

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)	-0.00070	-0.00111	0.01664
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00560	0.00448	0.02249
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00076	-0.00111	0.01661
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00070	-0.00111	0.01664
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00560	0.00448	0.02249
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00076	-0.00095	0.01661

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)	0.01339	0.01339	0.03079
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02781	0.02731	0.04630
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02092	0.02067	0.03748
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02707	0.02694	0.05685
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01474	0.01465	0.03145
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01339	0.01339	0.03079
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02781	0.02731	0.04630
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02092	0.02067	0.03748
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02707	0.02694	0.05685
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01474	0.01465	0.03145

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT				OUTPUT	
D	**RN**	**SN**	**CK**	**Q**	**QN**
0	**1**	**1**	**R**	**0**	**1**
1	**1**	**1**	**R**	**1**	**0**
x	**0**	**x**	**x**	**0**	**1**
x	**1**	**0**	**x**	**1**	**0**
x	**1**	**1**	**x**	**IQ**	**IQN**

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffsr_1	46.39800
sky130_osu_sc_12T_ls__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ls__dffsr_1	0.00283	0.00288	0.00664	0.00903	1.17508	1.16912
sky130_osu_sc_12T_ls__dffsr_l	0.00283	0.00288	0.00664	0.00903	0.79498	0.79606

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	0.04087	0.05372
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.03149	0.04434

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)	0.33484	1.36039	14.07010
	QN->Q (FR)	0.03036	0.81701	12.49360
	RN->Q (RR)	0.26990	1.30685	14.11930
	SN->Q (FR)	0.25499	1.42699	16.49700
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.33506	1.46245	13.49930
	QN->Q (FR)	0.03567	0.88708	12.31700
	RN->Q (RR)	0.27028	1.41033	13.53770
	SN->Q (FR)	0.25524	1.52802	15.89420

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)	0.35729	1.40656	14.75710
	QN->Q (RF)	0.02119	0.55382	8.49425
	RN->Q (FF)	0.24734	1.45407	17.01100
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.36450	1.53185	14.25210
	QN->Q (RF)	0.02306	0.56404	7.92420
	RN->Q (FF)	0.25408	1.57913	16.50090

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)	0.32629	0.86470	6.76207
	RN->QN (FR)	0.21674	0.91141	9.01497
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.32926	0.93590	6.72945
	RN->QN (FR)	0.21955	0.98264	8.97597

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)	0.28774	0.67196	3.95866
	RN->QN (RF)	0.22334	0.61987	4.00484
	SN->QN (FF)	0.20858	0.73950	6.37599
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.28216	0.68757	3.72352
	RN->QN (RF)	0.21791	0.63619	3.76643
	SN->QN (FF)	0.20309	0.75411	6.12531

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)	-0.06735	-0.08468	-0.15144
	setup	CK (R)	0.25149	0.27460	1.13914
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.06693	-0.08519	-0.14905
	setup	CK (R)	0.25151	0.27418	1.13684

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)	-0.15279	-0.37194	-4.10275
	setup	CK (R)	0.18264	0.38501	4.18905
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.15474	-0.37289	-4.10274
	setup	CK (R)	0.18239	0.38501	4.18905

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)	-0.06735	-0.08468	-0.15144
	setup	CK (R)	0.25149	0.27460	1.13914
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.06693	-0.08519	-0.14905
	setup	CK (R)	0.25151	0.27418	1.13684

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)	-0.15279	-0.37194	-4.10275
	setup	CK (R)	0.18264	0.38501	4.18905
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.15474	-0.37289	-4.10274
	setup	CK (R)	0.18239	0.38501	4.18905

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)	0.20033	0.22209	1.14860
	removal	CK (R)	-0.03083	-0.03734	-0.07339
	hold	SN (R)	-0.20134	-0.33920	-1.47306
	setup	SN (R)	0.22698	0.37260	5.59283
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.19972	0.22251	1.14683
	removal	CK (R)	-0.03083	-0.03734	-0.07339
	hold	SN (R)	-0.19336	-0.33095	-1.42758
	setup	SN (R)	0.22357	0.36347	5.40249

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)	0.20033	0.22209	1.14860
	removal	CK (R)	-0.03083	-0.03734	-0.07339
	hold	SN (R)	-0.20164	-0.33920	-1.47306
	hold	SN (R)	-0.20134	-0.34126	-1.48275
	setup	SN (R)	0.22458	0.37016	5.28590
	setup	SN (R)	0.22698	0.37260	5.59283
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.19972	0.22251	1.14683
	removal	CK (R)	-0.03083	-0.03734	-0.07339
	hold	SN (R)	-0.19336	-0.33095	-1.42758
	hold	SN (R)	-0.19344	-0.33273	-1.43868
	setup	SN (R)	0.22357	0.36177	5.15042
	setup	SN (R)	0.21226	0.36347	5.40249

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 ()	0.16540	0.41870	13.33370
	min_pulse_width	RN ()	0.17174	0.41870	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.16540	0.41870	13.33370
	min_pulse_width	RN ()	0.16857	0.41870	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)	0.04151	0.07013	6.18262
	removal	CK (R)	-0.01857	-0.05397	-0.30961
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.03738	0.06997	6.11426
	removal	CK (R)	-0.01857	-0.05397	-0.30961

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)	0.04151	0.07013	6.18262
	removal	CK (R)	-0.01857	-0.05397	-0.30961
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.03738	0.06997	6.11426
	removal	CK (R)	-0.01857	-0.05397	-0.30961

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 ()	0.20340	0.41870	13.33370
	min_pulse_width	SN ()	0.20973	0.41870	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.20340	0.41870	13.33370
	min_pulse_width	SN ()	0.20023	0.41870	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 ()	0.14957	0.41870	13.33370
	min_pulse_width	CK ()	0.18124	0.41870	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.14324	0.41870	13.33370
	min_pulse_width	CK ()	0.17807	0.41870	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 ()	0.32861	0.42094	13.33370
	min_pulse_width	CK ()	0.15591	0.41870	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.32861	0.42094	13.33370
	min_pulse_width	CK ()	0.15591	0.41870	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	0.01091	0.00933	0.00157
	RN	0.02015	0.01857	0.00477
	SN	-0.00114	-0.06845	-1.04937
	SN	0.02259	0.02076	0.00734
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01004	0.00895	0.01290
	RN	0.01926	0.01820	0.01600
	SN	-0.00114	-0.05414	-0.70994
	SN	0.02171	0.02040	0.01797

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	0.01170	0.01071	0.00728
	RN	-0.00114	-0.06845	-1.04937
	RN	0.02430	0.02355	0.01981
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01078	0.00991	0.01098
	RN	-0.00114	-0.05414	-0.70994
	RN	0.02336	0.02272	0.02337

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	0.01170	0.01071	0.00820
	RN	-0.00114	-0.06824	-1.04405
	RN	0.02430	0.02355	0.01988
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01078	0.00992	0.01074
	RN	-0.00114	-0.05418	-0.71090
	RN	0.02336	0.02273	0.02342

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	0.01088	0.00931	0.00125
	RN	0.02011	0.01855	0.00505
	SN	-0.00114	-0.06824	-1.04399
	SN	0.02256	0.02075	0.00738
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01001	0.00894	0.01208
	RN	0.01922	0.01819	0.01567
	SN	-0.00114	-0.05418	-0.71087
	SN	0.02168	0.02037	0.01781

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	-0.00260	-0.00267	-0.00267
	(!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)	0.01396	0.01350	0.02534
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00487	0.00450	0.01644
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00484	0.00448	0.01641
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00490	0.00452	0.01647
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00260	-0.00267	-0.00267
	(!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)	0.01396	0.01350	0.02534
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00487	0.00450	0.01644
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00484	0.00448	0.01641
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00490	0.00452	0.01647

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	0.00270	0.00269	0.00267
	(!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)	0.01957	0.01925	0.03060
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00917	0.00897	0.02037
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00921	0.00900	0.02037
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00914	0.00894	0.02032
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00270	0.00269	0.00267
	(!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)	0.01957	0.01925	0.03060
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00917	0.00897	0.02037
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00921	0.00900	0.02037
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00914	0.00894	0.02032

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)	0.00261	0.00241	0.01996
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01207	0.01154	0.02916
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)	0.00261	0.00241	0.01996
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01207	0.01154	0.02916

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)	0.00962	0.01001	0.02703
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01870	0.01854	0.03549
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)	0.00962	0.01001	0.02703
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01870	0.01852	0.03549

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)	-0.00672	-0.00675	-0.00675
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00690	-0.00722	-0.00724
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00659	-0.00678	-0.00676
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00313	0.00284	0.01571
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)	-0.00672	-0.00675	-0.00675
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00690	-0.00722	-0.00724
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00659	-0.00678	-0.00676
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00313	0.00282	0.01571

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)	0.00674	0.00689	0.00677
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00722	0.00722	0.00724
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00673	0.00678	0.00677
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01522	0.01481	0.02562
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)	0.00674	0.00689	0.00677
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00722	0.00722	0.00724
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00673	0.00678	0.00676
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01521	0.01481	0.02562

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)	-0.00077	-0.00121	0.01651
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00665	0.00563	0.02354
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00659	0.00556	0.02348
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00058	-0.00095	0.01673
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00326	0.00264	0.03596
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00077	-0.00121	0.01651
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00665	0.00563	0.02354
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00659	0.00556	0.02348
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00058	-0.00095	0.01673
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00326	0.00264	0.03596

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)	0.03110	0.03061	0.04945
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01364	0.01357	0.03100
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02131	0.02110	0.03796
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02136	0.02112	0.03829
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02970	0.02942	0.05916
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01476	0.01464	0.03143
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01841	0.01832	0.05074
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03110	0.03061	0.04945
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01364	0.01363	0.03100
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02131	0.02110	0.03796
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02136	0.02112	0.03829
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02970	0.02942	0.05916
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01476	0.01464	0.03143
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01841	0.01833	0.05074

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT			OUTPUT	
D	SN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	1	0
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffs_1	38.58360
sky130_osu_sc_12T_ls__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ls__dffs_1	0.00284	0.00543	0.00887	1.13237	1.12477
sky130_osu_sc_12T_ls__dffs_l	0.00284	0.00544	0.00887	0.79471	0.79615

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.03142	0.04274
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.02203	0.03335

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)	0.23555	1.22957	13.62310
	QN->Q (FR)	0.03220	0.83894	12.73150
	SN->Q (FR)	0.18788	1.36985	16.05950
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.23642	1.34000	13.33390
	QN->Q (FR)	0.03571	0.88524	12.29510
	SN->Q (FR)	0.18931	1.47561	15.73950

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)	0.34475	1.39027	14.46420
	QN->Q (RF)	0.02126	0.54521	8.31172
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.34782	1.51237	14.20570
	QN->Q (RF)	0.02311	0.56290	7.91160

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)	0.31327	0.85517	6.69390
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.31221	0.91707	6.69035

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)	0.19180	0.54201	3.64849
	SN->QN (FF)	0.14360	0.68261	6.09012
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.18774	0.56714	3.57521
	SN->QN (FF)	0.13967	0.70357	5.98343

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)	-0.04612	-0.06581	-0.08628
	setup	CK (R)	0.16910	0.20436	0.92105
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.04860	-0.06467	-0.08748
	setup	CK (R)	0.16963	0.20422	0.91862

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)	-0.13751	-0.35621	-4.08002
	setup	CK (R)	0.17254	0.36682	4.13751
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.13612	-0.35633	-4.08065
	setup	CK (R)	0.17254	0.36682	4.13885

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)	-0.04612	-0.06581	-0.08628
	setup	CK (R)	0.16910	0.20436	0.92105
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.04860	-0.06467	-0.08748
	setup	CK (R)	0.16963	0.20422	0.91862

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)	-0.13751	-0.35621	-4.08002
	setup	CK (R)	0.17254	0.36682	4.13751
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.13612	-0.35633	-4.08065
	setup	CK (R)	0.17254	0.36682	4.13885

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)	0.04546	0.07154	4.48566
	removal	CK (R)	-0.02220	-0.05397	-0.32534
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04312	0.07134	4.39045
	removal	CK (R)	-0.02220	-0.05397	-0.32534

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)	0.04546	0.07154	4.48566
	removal	CK (R)	-0.02220	-0.05397	-0.32534
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.04312	0.07134	4.39045
	removal	CK (R)	-0.02220	-0.05397	-0.32534

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 ()	0.13058	0.41870	13.33370
	min_pulse_width	SN ()	0.13691	0.41870	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.13058	0.41870	13.33370
	min_pulse_width	SN ()	0.12741	0.41870	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 ()	0.09892	0.41870	13.33370
	min_pulse_width	CK ()	0.16857	0.41870	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.09575	0.41870	13.33370
	min_pulse_width	CK ()	0.16540	0.41870	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 ()	0.24773	0.41870	13.33370
	min_pulse_width	CK ()	0.14641	0.41870	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.24456	0.41870	13.33370
	min_pulse_width	CK ()	0.14641	0.41870	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	0.00869	0.00714	0.00082
	SN	-0.00114	-0.06694	-1.01123
	SN	0.01906	0.01747	0.00796
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00775	0.00665	0.01054
	SN	-0.00114	-0.05413	-0.70969
	SN	0.01812	0.01701	0.01788

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	0.01008	0.00876	0.00160
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00914	0.00826	0.00945

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	0.01008	0.00878	0.00155
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00914	0.00825	0.00928

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	0.00866	0.00711	0.00070
	SN	-0.00114	-0.06667	-1.00438
	SN	0.01903	0.01746	0.00761
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00772	0.00665	0.01014
	SN	-0.00114	-0.05419	-0.71095
	SN	0.01809	0.01700	0.01739

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	-0.00264	-0.00271	-0.00270
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01063	0.01013	0.02228
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00439	0.00401	0.01608
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00264	-0.00271	-0.00270
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01063	0.01013	0.02228
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00439	0.00401	0.01608

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	0.00274	0.00272	0.00270
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01690	0.01652	0.02818
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00847	0.00824	0.01985
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00274	0.00272	0.00270
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01690	0.01652	0.02818
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00847	0.00825	0.01985

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)	-0.00490	-0.00495	-0.00494
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00330	0.00301	0.01622
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)	-0.00490	-0.00495	-0.00494
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00330	0.00300	0.01622

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)	0.00496	0.00498	0.00495
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01043	0.01019	0.02333
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)	0.00496	0.00498	0.00495
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01043	0.01019	0.02333

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)	-0.00070	-0.00111	0.01662
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00065	-0.00103	0.01670
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00285	0.00233	0.03588
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00070	-0.00111	0.01662
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00065	-0.00103	0.01670
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00285	0.00233	0.03588

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)	0.02757	0.02710	0.04638
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01340	0.01335	0.03080
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02678	0.02645	0.05635
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01466	0.01457	0.03138
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01743	0.01747	0.05015
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02756	0.02710	0.04638
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01340	0.01337	0.03080
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02678	0.02646	0.05635
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01466	0.01457	0.03138
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01743	0.01747	0.05015

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00299	0.00879	1.03145
sky130_osu_sc_12T_ls__dff_l	0.00299	0.00878	0.74593

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.03789	0.04315
sky130_osu_sc_12T_ls__dff_l	0.00000	0.02850	0.03376

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)	0.19814	0.73719	6.48380
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.19828	0.79778	6.45173

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)	0.29237	0.62938	3.48135
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.29434	0.66625	3.50394

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)	-0.04460	-0.06076	-0.10861
	setup	CK (R)	0.13470	0.17474	0.87242
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.04460	-0.06076	-0.10884
	setup	CK (R)	0.13504	0.17471	0.87048

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)	-0.12767	-0.35648	-4.10717
	setup	CK (R)	0.15331	0.36785	4.15455
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.12498	-0.35648	-4.10733
	setup	CK (R)	0.15328	0.36783	4.15453

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 ()	0.08308	0.41870	13.33370
	min_pulse_width	CK ()	0.15274	0.41870	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.08308	0.41870	13.33370
	min_pulse_width	CK ()	0.14957	0.41870	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 ()**	0.20973	0.41870	13.33370
	min_pulse_width	**CK ()**	0.12108	0.41870	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.20973	0.41870	13.33370
	min_pulse_width	**CK ()**	0.12108	0.41870	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	0.01832	0.01750	0.04719
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01640	0.01562	0.04528

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	0.02057	0.01973	0.03750
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01871	0.01787	0.03563

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	-0.00231	-0.00263	-0.00263
	!CK	0.00000	0.00000	0.00000
	!CK	0.00962	0.00916	0.02118
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00231	-0.00263	-0.00263
	!CK	0.00000	0.00000	0.00000
	!CK	0.00962	0.00916	0.02118

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	0.00261	0.00265	0.00263
	!CK	0.00000	0.00000	0.00000
	!CK	0.01747	0.01715	0.02919
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00261	0.00265	0.00263
	!CK	0.00000	0.00000	0.00000
	!CK	0.01747	0.01715	0.02919

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)	-0.00074	-0.00115	0.01660
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00065	-0.00101	0.01673
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00074	-0.00115	0.01660
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00065	-0.00101	0.01671

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)	0.01336	0.01337	0.03078
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02654	0.02593	0.04575
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02716	0.02687	0.05730
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01458	0.01450	0.03131
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01336	0.01337	0.03078
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02654	0.02592	0.04575
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02716	0.02687	0.05730
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01458	0.01450	0.03131

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__inv_1	0.00290	1.05093
sky130_osu_sc_12T_ls__inv_10	0.02604	10.35050
sky130_osu_sc_12T_ls__inv_2	0.00540	2.17506
sky130_osu_sc_12T_ls__inv_3	0.00800	3.17370
sky130_osu_sc_12T_ls__inv_4	0.01054	4.26596
sky130_osu_sc_12T_ls__inv_6	0.01578	6.41741
sky130_osu_sc_12T_ls__inv_8	0.02091	8.48578
sky130_osu_sc_12T_ls__inv_l	0.00228	0.73511

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.00533	0.01024
sky130_osu_sc_12T_ls__inv_10	0.00000	0.05326	0.10241
sky130_osu_sc_12T_ls__inv_2	0.00000	0.01065	0.02048
sky130_osu_sc_12T_ls__inv_3	0.00000	0.01598	0.03072
sky130_osu_sc_12T_ls__inv_4	0.00000	0.02130	0.04096
sky130_osu_sc_12T_ls__inv_6	0.00000	0.03196	0.06145
sky130_osu_sc_12T_ls__inv_8	0.00000	0.04261	0.08193
sky130_osu_sc_12T_ls__inv_l	0.00000	0.00063	0.00107

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)**	0.03119	0.78300	11.65320
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.03484	0.50643	11.50250
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.02293	0.65822	11.59870
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.02447	0.61191	11.58970
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.02405	0.57651	11.52970
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.02648	0.54138	11.59660
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.03032	0.52022	11.58020
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.03589	0.83952	11.42580

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)**	0.01954	0.48296	7.21722
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.02532	0.30282	7.41675
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.01555	0.41819	7.38732
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.01675	0.38933	7.45272
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.01648	0.36253	7.44841
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.01946	0.33545	7.51793
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.02236	0.31734	7.51146
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.02208	0.51268	7.01362

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	0.00446	0.00465	0.00663
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.03650	0.04012	0.06049
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00769	0.00799	0.01219
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.01181	0.01245	0.01860
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01504	0.01609	0.02417
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.02225	0.02474	0.03607
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02940	0.03107	0.04805
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00349	0.00362	0.00570

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	-0.00080	-0.00061	0.00116
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01355	-0.01160	0.00847
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00256	-0.00225	0.00147
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00338	-0.00301	0.00274
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00527	-0.00450	0.00311
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00801	-0.00678	0.00472
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01086	-0.00920	0.00642
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00057	-0.00054	0.00115

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT			OUTPUT
A0	A1	S0	Y
0	0	x	0
0	1	0	0
x	1	1	1
1	x	0	1
1	0	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ls__mux2_1	0.23473	0.23470	0.00598	0.23462

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.01584	0.03071

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)	-	0.01261	0.23057	2.20966
	A1->Y (RR)	-	0.01490	0.23324	2.21111
	S0->Y (RR)	(!A0 * A1)	0.04343	0.25793	0.81028
	S0->Y (FR)	(A0 * !A1)	0.03387	0.39463	3.50832

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)	-	0.01439	0.23662	2.31978
	A1->Y (FF)	-	0.01289	0.23398	2.31348
	S0->Y (FF)	(!A0 * A1)	0.06641	0.37261	2.62404
	S0->Y (RF)	(A0 * !A1)	0.02166	0.25745	1.82749

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	-	-0.00434	-0.00435	-0.00436
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00283	-0.00283	-0.00283
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00577	0.00614	0.02447
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00282	-0.00294	0.01549

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	-	0.00434	0.00435	0.00436
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00283	0.00283	0.00283
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00073	0.00079	0.01944
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01201	0.01226	0.02992

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)	-0.00104	-0.00104	-0.00104

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)	0.00104	0.00104	0.00104

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)	-0.00125	-0.00125	-0.00125

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)	0.00125	0.00125	0.00125

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)	-0.00107	-0.00115	0.01745
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00103	-0.00110	0.01746

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)	0.00930	0.00944	0.02734
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00848	0.00875	0.02705

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__nand2_1	6.34920
sky130_osu_sc_12T_ls__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nand2_1	0.00289	0.00289	1.04449
sky130_osu_sc_12T_ls__nand2_l	0.00223	0.00226	0.73162

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.00534	0.02048
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.00066	0.00215

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)	0.03281	0.78536	11.64970
	B->Y (FR)	0.03756	0.75672	11.15760
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.03651	0.84010	11.41600
	B->Y (FR)	0.04372	0.84554	11.40020

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)	0.02852	0.60466	8.98540
	B->Y (RF)	0.03236	0.58712	8.49561
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.03186	0.65517	8.77060
	B->Y (RF)	0.03552	0.62812	8.22073

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	0.00474	0.00489	0.00669
	B	0.00000	0.00000	0.00000
	B	0.00602	0.00612	0.00791
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00367	0.00551
	B	0.00000	0.00000	0.00000
	B	0.00445	0.00452	0.00643

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	-0.00049	-0.00038	0.00121
	B	0.00000	0.00000	0.00000
	B	-0.00047	-0.00056	0.00077
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00033	-0.00034	0.00116
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00037	0.00083

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)	-0.00305	-0.00307	-0.00308
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00217	-0.00217	-0.00218

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)	0.00309	0.00312	0.00309
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00217	0.00220	0.00218

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)	-0.00285	-0.00287	-0.00285
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00204	-0.00204	-0.00204

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)	0.00290	0.00289	0.00286
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00206	0.00205	0.00204

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
x	1	0
1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__nor2_1	6.34920
sky130_osu_sc_12T_ls__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nor2_1	0.00284	0.00312	0.56431
sky130_osu_sc_12T_ls__nor2_l	0.00214	0.00236	0.41061

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.00544	0.01024
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.00067	0.00107

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)	0.06865	0.91383	11.01540
	B->Y (FR)	0.05414	0.91352	11.38330
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.07339	0.99420	10.95890
	B->Y (FR)	0.06180	0.99716	11.34420

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)	0.02591	0.40300	4.95668
	B->Y (RF)	0.02080	0.39215	4.94025
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.02756	0.42876	4.89493
	B->Y (RF)	0.02314	0.41882	4.88075

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	0.00632	0.00611	0.00796
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00470	0.00776
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00456	0.00448	0.00623
	B	0.00000	0.00000	0.00000
	B	0.00365	0.00373	0.00646

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	0.00058	0.00044	0.00310
	B	0.00000	0.00000	0.00000
	B	-0.00063	-0.00041	0.00206
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00041	0.00034	0.00264
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00021	0.00189

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)	-0.00232	-0.00266	-0.00266
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00158	-0.00182	-0.00181

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)	0.00265	0.00268	0.00266
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00181	0.00182	0.00181

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)	-0.00118	-0.00119	-0.00118
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00083	-0.00084	-0.00083

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)	0.00124	0.00125	0.00120
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00087	0.00087	0.00084

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	0	x	1
x	1	0	1
x	1	1	0
1	x	0	1
1	x	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__oai21_l	0.00289	0.00298	0.00253	0.56196

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.00327	0.01132

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)	0.07754	0.93834	11.40000
	A1->Y (FR)	0.09524	0.94298	11.03370
	B0->Y (FR)	0.04491	0.76637	9.82580

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)	0.03913	0.48027	5.74024
	A1->Y (RF)	0.04654	0.48051	5.67259
	B0->Y (RF)	0.03047	0.51155	6.46145

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	0.00679	0.00675	0.00927
	A1	0.00000	0.00000	0.00000
	A1	0.00828	0.00811	0.00972
	B0	0.00556	0.00565	0.00840

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	0.00017	0.00195
	A1	0.00000	0.00000	0.00000
	A1	0.00147	0.00121	0.00302
	B0	0.00064	0.00075	0.00291

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)	-0.00118	-0.00120	-0.00119
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00265	-0.00270	-0.00270
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00274	-0.00276	-0.00275

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)	0.00124	0.00125	0.00121
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00268	0.00270	0.00270
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00276	0.00278	0.00276

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)	-0.00224	-0.00257	-0.00257
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00261	-0.00268	-0.00268
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00271	-0.00273	-0.00272

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)	0.00255	0.00258	0.00257
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00266	0.00268	0.00268
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00272	0.00274	0.00272

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)	-0.00227	-0.00228	-0.00231

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)	0.00231	0.00236	0.00232

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	0	x	x	1
x	1	0	0	1
x	1	x	1	0
x	1	1	x	0
1	x	0	0	1
1	x	x	1	0
1	x	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_1	0.00272	0.00285	0.00303	0.00298	0.58889

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.00816	0.02048

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)	0.10119	0.93905	11.05100
	A1->Y (FR)	0.08724	0.94109	11.43800
	B0->Y (FR)	0.05783	0.91032	11.41390
	B1->Y (FR)	0.07320	0.90995	11.02920

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)	0.06362	0.52035	5.96841
	A1->Y (RF)	0.05160	0.50457	5.93287
	B0->Y (RF)	0.04385	0.53640	6.66776
	B1->Y (RF)	0.05640	0.55554	6.73416

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	0.01060	0.01045	0.01201
	A1	0.00912	0.00908	0.01155
	B0	0.00665	0.00659	0.00909
	B1	0.00823	0.00803	0.00960

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00228	0.00206	0.00376
	A1	0.00119	0.00108	0.00278
	B0	-0.00020	-0.00004	0.00221
	B1	0.00229	0.00208	0.00429

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)	-0.00228	-0.00261	-0.00260
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00228	-0.00261	-0.00260
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00254	-0.00261	-0.00260
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00263	-0.00264	-0.00264

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)	0.00259	0.00261	0.00260
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00258	0.00261	0.00260
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00258	0.00261	0.00260
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00265	0.00267	0.00265

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)	-0.00115	-0.00116	-0.00115
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00115	-0.00116	-0.00115
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00254	-0.00259	-0.00258
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00263	-0.00264	-0.00263

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)	0.00121	0.00122	0.00117
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00121	0.00122	0.00117
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00257	0.00259	0.00258
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00263	0.00266	0.00264

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)	-0.00116	-0.00118	-0.00117
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00116	-0.00118	-0.00117
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00296	-0.00303	-0.00302
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00299	-0.00301	-0.00305

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)	0.00122	0.00123	0.00118
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00122	0.00123	0.00118
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00303	0.00304	0.00302
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00305	0.00312	0.00307

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)	-0.00226	-0.00259	-0.00258
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00226	-0.00259	-0.00258
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00301	-0.00309	-0.00308
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00304	-0.00305	-0.00311

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)	0.00257	0.00260	0.00258
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00257	0.00259	0.00258
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00308	0.00309	0.00308
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00311	0.00315	0.00312

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
x	1	1
1	x	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__or2_1	8.30280
sky130_osu_sc_12T_ls__or2_2	10.25640
sky130_osu_sc_12T_ls__or2_4	14.16360
sky130_osu_sc_12T_ls__or2_8	21.97800
sky130_osu_sc_12T_ls__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__or2_1	0.00319	0.00297	1.05978
sky130_osu_sc_12T_ls__or2_2	0.00320	0.00297	2.19069
sky130_osu_sc_12T_ls__or2_4	0.00320	0.00297	4.29454
sky130_osu_sc_12T_ls__or2_8	0.00320	0.00297	8.43547
sky130_osu_sc_12T_ls__or2_l	0.00239	0.00225	0.74837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.00831	0.01106
sky130_osu_sc_12T_ls__or2_2	0.00000	0.01118	0.02130
sky130_osu_sc_12T_ls__or2_4	0.00000	0.01692	0.04179
sky130_osu_sc_12T_ls__or2_8	0.00000	0.02839	0.08275
sky130_osu_sc_12T_ls__or2_l	0.00000	0.00108	0.00146

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)	0.06883	0.61610	6.45611
	B->Y (RR)	0.06091	0.58981	6.34545
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.07245	0.52703	6.53033
	B->Y (RR)	0.06413	0.50351	6.42744
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.09331	0.50455	6.72715
	B->Y (RR)	0.08468	0.48591	6.63381
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.13412	0.53963	7.12993
	B->Y (RR)	0.12538	0.52640	7.05696
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.07366	0.67615	6.33498
	B->Y (RR)	0.06626	0.65259	6.24173

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)	0.12451	0.60427	5.75462
	B->Y (FF)	0.10344	0.59299	5.80306
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.14998	0.60709	6.09262
	B->Y (FF)	0.12923	0.60437	6.14892
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.21304	0.66780	6.47977
	B->Y (FF)	0.19244	0.66987	6.53881
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.34191	0.81076	6.98113
	B->Y (FF)	0.32131	0.80955	7.09028
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.13102	0.63842	5.69894
	B->Y (FF)	0.11167	0.63025	5.74946

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	0.00472	0.00435	0.01543
	B	0.00000	0.00000	0.00000
	B	0.00358	0.00369	0.01578
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00789	0.00780	0.01920
	B	0.00000	0.00000	0.00000
	B	0.00670	0.00712	0.01960
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01509	0.01558	0.02684
	B	0.00000	0.00000	0.00000
	B	0.01384	0.01495	0.02742
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02977	0.03086	0.04326
	B	0.00000	0.00000	0.00000
	B	0.02850	0.03111	0.04367
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00356	0.00342	0.01306
	B	0.00000	0.00000	0.00000
	B	0.00278	0.00292	0.01377

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	0.01061	0.01021	0.01971
	B	0.00000	0.00000	0.00000
	B	0.00878	0.00922	0.02338
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.01309	0.01302	0.02219
	B	0.00000	0.00000	0.00000
	B	0.01126	0.01195	0.02533
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01968	0.01975	0.02851
	B	0.00000	0.00000	0.00000
	B	0.01791	0.01831	0.03062
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.03608	0.03303	0.04123
	B	0.00000	0.00000	0.00000
	B	0.03417	0.03225	0.04334
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00786	0.00762	0.01638
	B	0.00000	0.00000	0.00000
	B	0.00661	0.00713	0.01946

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)	-0.00235	-0.00268	-0.00268
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00268	-0.00268
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00268	-0.00268
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00235	-0.00268	-0.00268
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00158	-0.00182	-0.00182

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)	0.00267	0.00270	0.00268
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00266	0.00270	0.00268
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00266	0.00270	0.00268
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00266	0.00270	0.00268
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00181	0.00183	0.00182

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00118	-0.00119	-0.00119
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00118	-0.00119	-0.00119
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00118	-0.00120	-0.00119
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00118	-0.00120	-0.00119
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00081	-0.00082	-0.00081

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)	0.00124	0.00126	0.00120
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00124	0.00126	0.00121
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00124	0.00126	0.00121
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00124	0.00126	0.00121
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00085	0.00086	0.00083

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	OE	Y
-	0	HiZ
0	1	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__tbufi_1	8.30280
sky130_osu_sc_12T_ls__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tbufi_1	0.00310	0.00404	0.59355
sky130_osu_sc_12T_ls__tbufi_l	0.00237	0.00308	0.41116

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.00552	0.02048
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.00074	0.00215

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)	0.05012	0.90735	11.46520
	OE->Y (FR)	0.05167	0.32934	5.24761
	OE->Y (RR)	0.08184	0.71864	6.49714
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.05970	0.99623	11.35360
	OE->Y (FR)	0.05238	0.32928	5.24754
	OE->Y (RR)	0.08931	0.81034	6.46597

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)	0.02781	0.49655	6.35321
	OE->Y (FF)	0.05259	0.32933	5.24765
	OE->Y (RF)	0.02602	0.46674	5.84521
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.03150	0.52553	6.13365
	OE->Y (FF)	0.05342	0.32927	5.24751
	OE->Y (RF)	0.02902	0.49245	5.58189

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	0.00457	0.00452	0.00710
	OE	0.00000	0.00000	0.00000
	OE	0.00452	0.00457	0.02158
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00344	0.00349	0.00590
	OE	0.00000	0.00000	0.00000
	OE	0.00329	0.00340	0.01826

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	-0.00063	-0.00046	0.00168
	OE	0.00000	0.00000	0.00000
	OE	0.00278	0.00282	0.02181
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00038	-0.00026	0.00161
	OE	0.00000	0.00000	0.00000
	OE	0.00195	0.00205	0.01823

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)	-0.00209	-0.00211	-0.00210
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00184	-0.00188	-0.00185
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00152	-0.00153	-0.00152
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00134	-0.00135	-0.00134

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)	0.00209	0.00211	0.00210
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00189	0.00190	0.00186
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00152	0.00153	0.00152
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00137	0.00137	0.00135

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)	0.00165	0.00171	0.02085
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00146	0.00155	0.02067
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00115	0.00128	0.01754
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00100	0.00111	0.01739

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)	0.00537	0.00553	0.02405
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00556	0.00569	0.02419
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00403	0.00443	0.02019
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00418	0.00454	0.02030

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	OE	Y
0	0	1
1	0	0
-	1	HiZ

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__tnbufi_1	8.30280
sky130_osu_sc_12T_ls__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tnbufi_1	0.00309	0.00462	0.59007
sky130_osu_sc_12T_ls__tnbufi_l	0.00227	0.00348	0.41142

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.00880	0.01065
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.00103	0.00127

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)	0.05052	0.90580	11.42310
	OE->Y (RR)	0.02563	0.32947	5.24772
	OE->Y (FR)	0.06142	0.90085	11.02850
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.05859	0.99500	11.35520
	OE->Y (RR)	0.02825	0.32922	5.24749
	OE->Y (FR)	0.06765	0.99139	10.94990

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)	0.02726	0.49533	6.32965
	OE->Y (RF)	0.02535	0.32945	5.24779
	OE->Y (FF)	0.05532	0.49406	4.78528
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.03009	0.52159	6.13504
	OE->Y (RF)	0.02770	0.32920	5.24753
	OE->Y (FF)	0.06075	0.53229	4.69315

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	0.00473	0.00473	0.00727
	OE	0.00000	0.00000	0.00000
	OE	0.01135	0.01189	0.03091
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00353	0.00357	0.00600
	OE	0.00000	0.00000	0.00000
	OE	0.00857	0.00901	0.02528

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	-0.00084	-0.00066	0.00149
	OE	0.00000	0.00000	0.00000
	OE	0.00979	0.01039	0.02653
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00061	-0.00047	0.00141
	OE	0.00000	0.00000	0.00000
	OE	0.00738	0.00790	0.02237

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)	-0.00172	-0.00174	-0.00173
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00150	-0.00151	-0.00150
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00119	-0.00120	-0.00118
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00103	-0.00105	-0.00103

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)	0.00172	0.00174	0.00173
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00153	0.00154	0.00151
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00119	0.00120	0.00118
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00105	0.00106	0.00104

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)	-0.00302	-0.00325	0.01617
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00291	-0.00318	0.01621
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00207	-0.00218	0.01424
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00202	-0.00215	0.01425

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)	0.00848	0.00904	0.02828
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00836	0.00903	0.02818
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00645	0.00696	0.02326
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00639	0.00699	0.02321

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xnor2_l	0.00619	0.00531	0.61277

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.01641	0.03114

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	0.10458	0.75799	6.69037
	A->Y (FR)	!B	0.06817	0.92754	11.58030
	B->Y (RR)	A	0.08521	0.74017	6.70509
	B->Y (FR)	!A	0.08417	0.92526	11.19420

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	0.09384	0.57396	5.12884
	A->Y (RF)	!B	0.03789	0.48338	5.98857
	B->Y (FF)	A	0.08259	0.56360	5.12446
	B->Y (RF)	!A	0.04604	0.49427	5.99675

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	0.00482	0.00465	0.02204
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01150	0.01161	0.03257
	B	A	0.00000	0.00000	0.00000
	B	A	0.00197	0.00215	0.02130
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01227	0.01247	0.03241

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	0.01348	0.01328	0.03132
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00306	0.00297	0.02351
	B	A	0.00000	0.00000	0.00000
	B	A	0.01236	0.01282	0.03135
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00376	0.00358	0.02408

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xor2_l	0.00621	0.00535	0.56612

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.01641	0.02145

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	0.11028	0.76118	6.55933
	A->Y (FR)	B	0.08627	0.93180	11.07510
	B->Y (RR)	!A	0.09043	0.75132	6.56174
	B->Y (FR)	A	0.09476	0.94094	11.07330

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	0.08990	0.56141	4.85325
	A->Y (RF)	B	0.03916	0.50758	6.18391
	B->Y (FF)	!A	0.08549	0.55787	4.90310
	B->Y (RF)	A	0.04494	0.48117	5.69886

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	0.01340	0.01352	0.03300
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00282	0.00199	0.02043
	B	A	0.00000	0.00000	0.00000
	B	A	0.01363	0.01386	0.03318
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00189	0.00195	0.02091

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	0.00239	0.00213	0.02254
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01419	0.01453	0.03002
	B	A	0.00000	0.00000	0.00000
	B	A	0.00242	0.00213	0.02195
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01253	0.01308	0.03115

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_tt_1P89_25C.ccs
Cell Library: Process , Voltage 1.89,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__ant	4.39560
sky130_osu_sc_12T_ls__tiehi	4.39560
sky130_osu_sc_12T_ls__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ls__ant	0.30238
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	161509.00000	323018.00000
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
	-0.00196	0.03396	0.54930

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
	2.81215	2.68270	0.67423