sky130_osu_sc_12T_ls_ss_1P60_150C.ccs Library

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

SKY130_OSU_SC_12T_LS__ADDFx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addf_1	31.25760
sky130_osu_sc_12T_ls__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	**B**	**CI**	**CO**	**CON**	**S**
sky130_osu_sc_12T_ls__addf_1	0.01168	0.01168	0.00904	0.68984	0.30287	0.63743
sky130_osu_sc_12T_ls__addf_l	0.01169	0.01168	0.00904	0.49653	0.30381	0.63743

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addf_1	0.00000	0.44943	0.57608
sky130_osu_sc_12T_ls__addf_l	0.00000	0.42860	0.56319

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)	0.33658	2.64963	28.58440
	B->CO (RR)	0.33991	2.64306	28.54690
	CI->CO (RR)	0.31919	2.67622	29.21270
	CON->CO (FR)	0.05029	0.98020	11.86730
sky130_osu_sc_12T_ls__addf_1	A->CO (RR)	0.33295	2.46826	23.69110
	B->CO (RR)	0.33639	2.46993	23.84400
	CI->CO (RR)	0.31562	2.49562	24.33080
	CON->CO (FR)	0.05742	1.05537	11.77120

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)	0.46349	3.28593	34.79620
	B->CO (FF)	0.42020	3.17884	33.88320
	CI->CO (FF)	0.41459	3.25142	35.20780
	CON->CO (RF)	0.03999	0.77065	9.40199
sky130_osu_sc_12T_ls__addf_1	A->CO (FF)	0.46306	3.07439	28.84370
	B->CO (FF)	0.42315	2.94264	28.16920
	CI->CO (FF)	0.41388	3.03935	29.27370
	CON->CO (RF)	0.04707	0.86483	9.78372

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)	0.33426	1.41469	11.06570
	B->CON (FR)	0.29893	1.34271	11.10550
	CI->CON (FR)	0.28547	1.37995	11.52010
sky130_osu_sc_12T_ls__addf_l	A->CON (FR)	0.31637	1.39830	11.07190
	B->CON (FR)	0.28215	1.32724	11.10920
	CI->CON (FR)	0.26763	1.36330	11.52400

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)	0.20657	0.94179	7.82456
	B->CON (RF)	0.21102	0.97461	8.36711
	CI->CON (RF)	0.18904	0.97003	8.51094
sky130_osu_sc_12T_ls__addf_l	A->CON (RF)	0.19868	0.93491	7.83150
	B->CON (RF)	0.20325	0.96799	8.37247
	CI->CON (RF)	0.18111	0.96318	8.51655

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)	0.67732	3.14721	27.26900
	B->S (-R)	0.71065	3.18587	27.04350
	CI->S (-R)	0.62452	3.10448	27.67420
	CON->S (RR)	0.17606	1.02842	8.21205
sky130_osu_sc_12T_ls__addf_l	A->S (-R)	0.65003	3.12619	27.25030
	B->S (-R)	0.68312	3.16508	27.02540
	CI->S (-R)	0.59723	3.08328	27.65550
	CON->S (RR)	0.17614	1.02840	8.21170

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)	0.56860	2.43340	19.64480
	B->S (-F)	0.57260	2.37862	19.67320
	CI->S (-F)	0.54982	2.45057	20.26560
	CON->S (FF)	0.21251	0.99742	6.80423
sky130_osu_sc_12T_ls__addf_l	A->S (-F)	0.55235	2.42190	19.63550
	B->S (-F)	0.55649	2.36657	19.66960
	CI->S (-F)	0.53355	2.43878	20.25610
	CON->S (FF)	0.21255	0.99737	6.80392

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	0.00236	0.00234	0.00389
	B	0.00293	0.00306	0.00464
	CI	0.00306	0.00324	0.00501
sky130_osu_sc_12T_ls__addf_l	A	0.00209	0.00203	0.00303
	B	0.00266	0.00273	0.00377
	CI	0.00279	0.00292	0.00411

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00760	0.00788	0.01097
	B	0.00799	0.00827	0.01097
	CI	0.00705	0.00739	0.01017
sky130_osu_sc_12T_ls__addf_l	A	0.00795	0.00804	0.00972
	B	0.00776	0.00799	0.00971
	CI	0.00682	0.00711	0.00891

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00815	0.00819	0.00922
	B	0.00798	0.00815	0.00918
	CI	0.00703	0.00728	0.00823
sky130_osu_sc_12T_ls__addf_l	A	0.00794	0.00796	0.00891
	B	0.00776	0.00792	0.00886
	CI	0.00680	0.00705	0.00788

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00234	0.00228	0.00291
	B	0.00291	0.00294	0.00364
	CI	0.00304	0.00316	0.00393
sky130_osu_sc_12T_ls__addf_l	A	0.00208	0.00201	0.00260
	B	0.00264	0.00267	0.00333
	CI	0.00278	0.00288	0.00362

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.00759	0.00782	0.01069
	B	0.00800	0.00825	0.01073
	CI	0.00704	0.00738	0.00991
sky130_osu_sc_12T_ls__addf_l	A	0.00795	0.00805	0.01026
	B	0.00777	0.00801	0.01029
	CI	0.00682	0.00713	0.00947

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__addf_1	A	0.01655	0.01664	0.01832
	B	0.01516	0.01492	0.01767
	CI	0.01359	0.01357	0.01538
sky130_osu_sc_12T_ls__addf_l	A	0.01656	0.01664	0.01832
	B	0.01516	0.01492	0.01767
	CI	0.01359	0.01357	0.01538

SKY130_OSU_SC_12T_LS__ADDHx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__addh_1	18.55920
sky130_osu_sc_12T_ls__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ls__addh_1	0.00577	0.00605	0.67476	0.68493	0.68964
sky130_osu_sc_12T_ls__addh_l	0.00577	0.00605	0.49474	0.68615	0.50393

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__addh_1	0.00000	0.56476	0.62013
sky130_osu_sc_12T_ls__addh_l	0.00000	0.52297	0.57846

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)	0.23017	1.08762	8.35690
	B->CO (RR)	0.23566	1.06462	8.34456
sky130_osu_sc_12T_ls__addh_l	A->CO (RR)	0.22554	1.14240	8.26339
	B->CO (RR)	0.23080	1.12051	8.25620

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)	0.17967	0.93047	7.00125
	B->CO (FF)	0.18749	0.94879	7.09983
sky130_osu_sc_12T_ls__addh_l	A->CO (FF)	0.18071	1.00618	7.30680
	B->CO (FF)	0.18849	1.02842	7.41462

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)	0.31608	1.13741	8.35663
	B->CON (RR)	0.32062	1.11236	8.33872
sky130_osu_sc_12T_ls__addh_l	A->CON (RR)	0.29032	1.10785	8.27957
	B->CON (RR)	0.29519	1.08331	8.26890

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)	0.23660	0.97212	7.08137
	B->CON (FF)	0.23304	0.98017	7.17479
sky130_osu_sc_12T_ls__addh_l	A->CON (FF)	0.21779	0.93895	6.92426
	B->CON (FF)	0.21458	0.95031	7.01525

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)	0.33445	2.02346	18.80720
	B->S (FR)	0.33010	2.03192	18.92720
	CON->S (FR)	0.05198	0.98526	11.95850
sky130_osu_sc_12T_ls__addh_l	A->S (FR)	0.31912	1.93348	16.09450
	B->S (FR)	0.31481	1.94401	16.20170
	CON->S (FR)	0.05775	1.06006	11.90350

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)	0.40556	2.07891	18.84390
	B->S (RF)	0.41031	2.05445	18.82830
	CON->S (RF)	0.03943	0.77034	9.42026
sky130_osu_sc_12T_ls__addh_l	A->S (RF)	0.38837	1.99659	16.10430
	B->S (RF)	0.39307	1.97203	16.09240
	CON->S (RF)	0.04617	0.86838	9.88328

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	0.00385	0.00374	0.00490
	B	0.00000	0.00000	0.00000
	B	0.00348	0.00334	0.00431
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00336	0.00319	0.00428
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00280	0.00368

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	0.00552	0.00537	0.00636
	B	0.00000	0.00000	0.00000
	B	0.00575	0.00581	0.00687
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00501	0.00483	0.00587
	B	0.00000	0.00000	0.00000
	B	0.00525	0.00525	0.00634

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	0.00384	0.00373	0.00489
	B	0.00000	0.00000	0.00000
	B	0.00348	0.00334	0.00419
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00336	0.00319	0.00425
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00280	0.00364

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	0.00552	0.00537	0.00637
	B	0.00000	0.00000	0.00000
	B	0.00575	0.00581	0.00690
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00501	0.00481	0.00580
	B	0.00000	0.00000	0.00000
	B	0.00525	0.00525	0.00627

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	0.00553	0.00538	0.00631
	B	0.00000	0.00000	0.00000
	B	0.00576	0.00581	0.00682
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00502	0.00483	0.00582
	B	0.00000	0.00000	0.00000
	B	0.00526	0.00526	0.00638

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	0.00385	0.00373	0.00482
	B	0.00000	0.00000	0.00000
	B	0.00348	0.00334	0.00428
sky130_osu_sc_12T_ls__addh_l	A	0.00000	0.00000	0.00000
	A	0.00336	0.00319	0.00428
	B	0.00000	0.00000	0.00000
	B	0.00299	0.00280	0.00369

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)	0.53772	0.50921	0.15120
sky130_osu_sc_12T_ls__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.53781	0.50931	0.15130

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)	0.53780	0.50961	0.16457
sky130_osu_sc_12T_ls__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.53790	0.50969	0.16467

SKY130_OSU_SC_12T_LS__AND2x

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__and2_1	0.00307	0.00318	0.67549
sky130_osu_sc_12T_ls__and2_2	0.00307	0.00317	1.34697
sky130_osu_sc_12T_ls__and2_4	0.00307	0.00317	2.64085
sky130_osu_sc_12T_ls__and2_6	0.00310	0.00317	3.91940
sky130_osu_sc_12T_ls__and2_8	0.00307	0.00318	5.15796
sky130_osu_sc_12T_ls__and2_l	0.00227	0.00234	0.49730

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__and2_1	0.00000	0.20600	0.25724
sky130_osu_sc_12T_ls__and2_2	0.00000	0.13895	0.17157
sky130_osu_sc_12T_ls__and2_4	0.00000	0.19776	0.22875
sky130_osu_sc_12T_ls__and2_6	0.00000	0.25657	0.28594
sky130_osu_sc_12T_ls__and2_8	0.00000	0.31537	0.34313
sky130_osu_sc_12T_ls__and2_l	0.00000	0.17129	0.20905

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)	0.17522	0.98462	7.98700
	B->Y (RR)	0.18488	0.97430	7.99630
sky130_osu_sc_12T_ls__and2_2	A->Y (RR)	0.19929	0.92149	8.23473
	B->Y (RR)	0.20891	0.90187	8.21408
sky130_osu_sc_12T_ls__and2_4	A->Y (RR)	0.27256	0.96077	8.73666
	B->Y (RR)	0.28220	0.93317	8.66302
sky130_osu_sc_12T_ls__and2_6	A->Y (RR)	0.34628	1.03561	9.14628
	B->Y (RR)	0.35571	1.00334	9.02529
sky130_osu_sc_12T_ls__and2_8	A->Y (RR)	0.41683	1.11293	9.47464
	B->Y (RR)	0.42645	1.08232	9.32914
sky130_osu_sc_12T_ls__and2_l	A->Y (RR)	0.18411	1.08300	8.30427
	B->Y (RR)	0.19369	1.07380	8.32107

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)**	0.14009	0.82883	6.42145
	B->Y (FF)	0.14550	0.85129	6.52605
sky130_osu_sc_12T_ls__and2_2	**A->Y (FF)**	0.16309	0.80821	6.73536
	B->Y (FF)	0.16781	0.82310	6.83278
sky130_osu_sc_12T_ls__and2_4	**A->Y (FF)**	0.23021	0.86262	7.28701
	B->Y (FF)	0.23203	0.86757	7.35626
sky130_osu_sc_12T_ls__and2_6	**A->Y (FF)**	0.29997	0.93259	7.70244
	B->Y (FF)	0.29854	0.93211	7.75175
sky130_osu_sc_12T_ls__and2_8	**A->Y (FF)**	0.36569	1.00131	8.00518
	B->Y (FF)	0.36162	0.99699	8.04327
sky130_osu_sc_12T_ls__and2_l	**A->Y (FF)**	0.14249	0.90654	6.57434
	B->Y (FF)	0.15176	0.92905	6.67608

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	0.00281	0.00257	0.00628
	B	0.00000	0.00000	0.00000
	B	0.00286	0.00246	0.00520
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00523	0.00525	0.00872
	B	0.00000	0.00000	0.00000
	B	0.00528	0.00515	0.00771
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01079	0.01111	0.01456
	B	0.00000	0.00000	0.00000
	B	0.01086	0.01107	0.01366
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01655	0.01711	0.02075
	B	0.00000	0.00000	0.00000
	B	0.01652	0.01702	0.01986
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02239	0.02251	0.02653
	B	0.00000	0.00000	0.00000
	B	0.02236	0.02285	0.02602
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00212	0.00193	0.00432
	B	0.00000	0.00000	0.00000
	B	0.00215	0.00187	0.00361

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	0.00681	0.00685	0.01035
	B	0.00000	0.00000	0.00000
	B	0.00768	0.00765	0.01095
sky130_osu_sc_12T_ls__and2_2	A	0.00000	0.00000	0.00000
	A	0.00847	0.00891	0.01232
	B	0.00000	0.00000	0.00000
	B	0.00936	0.00968	0.01292
sky130_osu_sc_12T_ls__and2_4	A	0.00000	0.00000	0.00000
	A	0.01266	0.01381	0.01722
	B	0.00000	0.00000	0.00000
	B	0.01357	0.01453	0.01773
sky130_osu_sc_12T_ls__and2_6	A	0.00000	0.00000	0.00000
	A	0.01721	0.01878	0.02241
	B	0.00000	0.00000	0.00000
	B	0.01805	0.01943	0.02285
sky130_osu_sc_12T_ls__and2_8	A	0.00000	0.00000	0.00000
	A	0.02152	0.02365	0.02732
	B	0.00000	0.00000	0.00000
	B	0.02236	0.02422	0.02761
sky130_osu_sc_12T_ls__and2_l	A	0.00000	0.00000	0.00000
	A	0.00501	0.00499	0.00744
	B	0.00000	0.00000	0.00000
	B	0.00561	0.00557	0.00785

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)	-0.00239	-0.00241	-0.00242
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00239	-0.00241	-0.00242
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00239	-0.00241	-0.00242
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00241	-0.00242	-0.00244
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00238	-0.00240	-0.00241
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00164	-0.00164	-0.00165

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)	0.00243	0.00244	0.00243
sky130_osu_sc_12T_ls__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00243	0.00243	0.00243
sky130_osu_sc_12T_ls__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00243	0.00247	0.00243
sky130_osu_sc_12T_ls__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00245	0.00249	0.00245
sky130_osu_sc_12T_ls__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00243	0.00246	0.00243
sky130_osu_sc_12T_ls__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00167	0.00167	0.00166

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)	-0.00230	-0.00231	-0.00231
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00231	-0.00231
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00231	-0.00231
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00232	-0.00231
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00231	-0.00232	-0.00231
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00158	-0.00159	-0.00159

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)	0.00233	0.00234	0.00232
sky130_osu_sc_12T_ls__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00233	0.00235	0.00232
sky130_osu_sc_12T_ls__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00234	0.00235	0.00232
sky130_osu_sc_12T_ls__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00234	0.00235	0.00232
sky130_osu_sc_12T_ls__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00234	0.00235	0.00232
sky130_osu_sc_12T_ls__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00162	0.00159	0.00160

SKY130_OSU_SC_12T_LS__AOI21

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__aoi21_l	0.00281	0.00299	0.00295	0.29553

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi21_l	0.00000	0.14766	0.33230

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)	0.16983	1.26426	10.91690
	A1->Y (FR)	0.14127	1.18110	10.49720
	B0->Y (FR)	0.13080	1.24109	11.43710

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)	0.11115	0.83125	7.53692
	A1->Y (RF)	0.10423	0.86028	8.16518
	B0->Y (RF)	0.05788	0.74404	7.68456

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	0.00580	0.00573	0.00598
	A1	0.00000	0.00000	0.00000
	A1	0.00496	0.00488	0.00512
	B0	0.00463	0.00454	0.00482

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	0.00124	0.00101	0.00133
	A1	0.00000	0.00000	0.00000
	A1	0.00126	0.00104	0.00148
	B0	-0.00045	-0.00054	-0.00029

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)	-0.00193	-0.00201	-0.00200
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00204	-0.00205	-0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00204	-0.00205	-0.00205

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)	0.00198	0.00201	0.00200
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00205	0.00205	0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00207	0.00208	0.00206

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)	-0.00194	-0.00201	-0.00200
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00205	-0.00205	-0.00205
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00221	-0.00220	-0.00223

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)	0.00199	0.00202	0.00200
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00206	0.00208	0.00206
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00223	0.00225	0.00224

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)	-0.00092	-0.00092	-0.00091

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)	0.00101	0.00102	0.00094

SKY130_OSU_SC_12T_LS__AOI22

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__aoi22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__aoi22_1	0.00281	0.00299	0.00313	0.00295	0.29216

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__aoi22_1	0.00000	0.14334	0.38281

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)	0.21494	1.31427	10.91690
	A1->Y (FR)	0.19299	1.28634	10.86460
	B0->Y (FR)	0.13886	1.24414	11.36910
	B1->Y (FR)	0.16132	1.27192	11.43160

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)	0.14894	0.86820	7.53314
	A1->Y (RF)	0.14180	0.89797	8.16104
	B0->Y (RF)	0.07682	0.82347	8.08389
	B1->Y (RF)	0.08471	0.79465	7.45470

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	0.00709	0.00702	0.00722
	A1	0.00626	0.00617	0.00636
	B0	0.00496	0.00485	0.00533
	B1	0.00580	0.00572	0.00620

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	A0	0.00249	0.00228	0.00257
	A1	0.00250	0.00229	0.00272
	B0	-0.00025	-0.00032	0.00015
	B1	-0.00021	-0.00033	0.00001

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00193	-0.00200	-0.00200
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00204	-0.00205	-0.00205
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00204	-0.00205	-0.00204
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00204	-0.00205	-0.00205

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)	0.00200	0.00203	0.00200
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00204	0.00205	0.00205
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00207	0.00208	0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00207	0.00208	0.00205

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)	-0.00194	-0.00201	-0.00200
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00206	-0.00206	-0.00205
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00220	-0.00221	-0.00222
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00220	-0.00221	-0.00222

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)	0.00199	0.00201	0.00200
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00206	0.00207	0.00206
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00223	0.00224	0.00223
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00222	0.00224	0.00223

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)	-0.00091	-0.00092	-0.00091
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00089	-0.00090	-0.00090
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00230	-0.00230	-0.00232
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00229	-0.00230	-0.00232

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)	0.00106	0.00106	0.00095
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00091	0.00091	0.00091
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00232	0.00233	0.00232
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00232	0.00233	0.00232

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)	-0.00092	-0.00093	-0.00092
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00091	-0.00092	-0.00091
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00214	-0.00214	-0.00215
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00214	-0.00216	-0.00215

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)	0.00107	0.00107	0.00096
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00092	0.00092	0.00092
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00217	0.00217	0.00215
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00217	0.00217	0.00215

SKY130_OSU_SC_12T_LS__BUFx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__buf_1	0.00319	0.64638
sky130_osu_sc_12T_ls__buf_2	0.00319	1.32277
sky130_osu_sc_12T_ls__buf_4	0.00318	2.62851
sky130_osu_sc_12T_ls__buf_6	0.00085	1.80000
sky130_osu_sc_12T_ls__buf_8	0.00318	5.19513
sky130_osu_sc_12T_ls__buf_l	0.00231	0.49859

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__buf_1	0.00000	0.21772	0.21772
sky130_osu_sc_12T_ls__buf_2	0.00000	0.16929	0.20654
sky130_osu_sc_12T_ls__buf_4	0.00000	0.22972	0.27021
sky130_osu_sc_12T_ls__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ls__buf_8	0.00000	0.35058	0.39756
sky130_osu_sc_12T_ls__buf_l	0.00000	0.17605	0.17605

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)**	0.11818	0.91777	7.78932
sky130_osu_sc_12T_ls__buf_2	**A->Y (RR)**	0.12570	0.82293	8.01002
sky130_osu_sc_12T_ls__buf_4	**A->Y (RR)**	0.16669	0.81985	8.43237
sky130_osu_sc_12T_ls__buf_8	**A->Y (RR)**	0.24782	0.89603	9.07694
sky130_osu_sc_12T_ls__buf_l	**A->Y (RR)**	0.12605	1.00490	8.11390

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)**	0.13285	0.80639	6.17546
sky130_osu_sc_12T_ls__buf_2	**A->Y (FF)**	0.15621	0.79398	6.62589
sky130_osu_sc_12T_ls__buf_4	**A->Y (FF)**	0.22363	0.85195	7.23754
sky130_osu_sc_12T_ls__buf_8	**A->Y (FF)**	0.35881	0.99264	8.02240
sky130_osu_sc_12T_ls__buf_l	**A->Y (FF)**	0.13850	0.89735	6.55492

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	0.00269	0.00233	0.00585
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00509	0.00499	0.00840
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01059	0.01090	0.01418
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02165	0.02237	0.02605
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00205	0.00177	0.00416

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	0.00666	0.00659	0.01005
sky130_osu_sc_12T_ls__buf_2	A	0.00000	0.00000	0.00000
	A	0.00828	0.00854	0.01190
sky130_osu_sc_12T_ls__buf_4	A	0.00000	0.00000	0.00000
	A	0.01254	0.01338	0.01668
sky130_osu_sc_12T_ls__buf_8	A	0.00000	0.00000	0.00000
	A	0.02133	0.02310	0.02650
sky130_osu_sc_12T_ls__buf_l	A	0.00000	0.00000	0.00000
	A	0.00498	0.00494	0.00742

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
	-0.00053	-0.00053	-0.00051

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
	0.00053	0.00053	0.00051

SKY130_OSU_SC_12T_LS__DFFRx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffr_1	42.49080
sky130_osu_sc_12T_ls__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ls__dffr_1	0.00293	0.00294	0.00900	0.67419	0.67356
sky130_osu_sc_12T_ls__dffr_l	0.00293	0.00294	0.00900	0.50026	0.49893

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffr_1	0.00000	0.90547	1.03399
sky130_osu_sc_12T_ls__dffr_l	0.00000	0.86380	0.99233

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)	0.65947	2.24565	17.46410
	QN->Q (FR)	0.05542	1.04037	12.54650
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RR)	0.65651	2.43314	17.91890
	QN->Q (FR)	0.06024	1.10426	12.32700

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)	0.66322	2.31617	18.59040
	QN->Q (RF)	0.04239	0.80595	9.78259
	RN->Q (FF)	0.47895	2.21712	19.29130
sky130_osu_sc_12T_ls__dffr_l	CK->Q (RF)	0.66975	2.55735	19.32010
	QN->Q (RF)	0.04858	0.89835	10.17700
	RN->Q (FF)	0.48643	2.45822	20.01000

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)	0.58774	1.41377	8.46553
	RN->QN (FR)	0.40299	1.31268	9.15983
sky130_osu_sc_12T_ls__dffr_l	CK->QN (RR)	0.58152	1.47968	8.50454
	RN->QN (FR)	0.39903	1.37825	9.19012

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)**	0.56453	1.23574	6.17754
sky130_osu_sc_12T_ls__dffr_l	**CK->QN (RF)**	0.55420	1.29848	6.56410

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)	-0.15293	-0.15488	-0.34369
	setup	CK (R)	0.49858	0.48381	1.39685
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.15180	-0.15415	-0.34463
	setup	CK (R)	0.49848	0.48398	1.39624

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)	-0.26406	-0.54079	-3.52073
	setup	CK (R)	0.31259	0.56092	3.55643
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.26212	-0.54171	-3.51862
	setup	CK (R)	0.31389	0.56092	3.55643

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)	-0.15293	-0.15488	-0.34369
	setup	CK (R)	0.49858	0.48381	1.39685
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.15180	-0.15415	-0.34463
	setup	CK (R)	0.49848	0.48398	1.39624

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)	-0.26406	-0.54079	-3.52073
	setup	CK (R)	0.31259	0.56092	3.55643
sky130_osu_sc_12T_ls__dffr_l	hold	CK (R)	-0.26212	-0.54171	-3.51862
	setup	CK (R)	0.31389	0.56092	3.55643

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)	0.40826	0.41890	1.44343
	removal	CK (R)	-0.08300	-0.09651	-0.13880
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.40881	0.41931	1.44345
	removal	CK (R)	-0.08285	-0.09624	-0.13763

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)	0.40826	0.41890	1.44343
	removal	CK (R)	-0.08300	-0.09651	-0.13880
sky130_osu_sc_12T_ls__dffr_l	recovery	CK (R)	0.40881	0.41931	1.44345
	removal	CK (R)	-0.08285	-0.09624	-0.13763

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 ()	0.29703	0.53223	13.33370
	min_pulse_width	RN ()	0.29703	0.53223	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	RN ()	0.28906	0.53223	13.33370
	min_pulse_width	RN ()	0.28906	0.53223	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 ()	0.31298	0.53223	13.33370
	min_pulse_width	CK ()	0.36081	0.53223	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.29304	0.53223	13.33370
	min_pulse_width	CK ()	0.35284	0.53223	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 ()	0.64035	0.68712	13.33370
	min_pulse_width	CK ()	0.26913	0.53223	13.33370
sky130_osu_sc_12T_ls__dffr_l	min_pulse_width	CK ()	0.63832	0.68493	13.33370
	min_pulse_width	CK ()	0.26913	0.53223	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	0.00672	0.00602	0.00538
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00596	0.00532	0.00676

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	0.00773	0.00713	0.00467
	RN	-0.00089	-0.03638	-0.43148
	RN	0.01726	0.01677	0.01412
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00696	0.00643	0.00588
	RN	-0.00089	-0.03041	-0.32016
	RN	0.01649	0.01608	0.01532

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	0.00773	0.00712	0.00463
	RN	-0.00089	-0.03636	-0.43106
	RN	0.01725	0.01677	0.01409
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00696	0.00643	0.00581
	RN	-0.00089	-0.03037	-0.31931
	RN	0.01648	0.01607	0.01525

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	0.00669	0.00600	0.00544
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00594	0.00530	0.00667

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	-0.00185	-0.00202	-0.00203
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00804	0.00760	0.00991
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00335	0.00295	0.00535
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00185	-0.00202	-0.00203
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00804	0.00760	0.00991
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00335	0.00295	0.00534

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	0.00202	0.00204	0.00203
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01290	0.01266	0.01494
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00626	0.00609	0.00839
sky130_osu_sc_12T_ls__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00202	0.00204	0.00203
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01290	0.01266	0.01494
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00626	0.00609	0.00839

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)	0.00255	0.00214	0.00574
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00751	0.00692	0.01044
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)	0.00255	0.00214	0.00574
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00751	0.00692	0.01044

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)	0.00640	0.00618	0.00979
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01302	0.01264	0.01595
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)	0.00640	0.00618	0.00979
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01302	0.01264	0.01595

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)	-0.00048	-0.00102	0.00246
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00398	0.00322	0.00669
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00053	-0.00107	0.00245
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00049	-0.00102	0.00246
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00398	0.00322	0.00669
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00053	-0.00107	0.00245

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)	0.01005	0.00977	0.01325
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02074	0.02006	0.02316
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01576	0.01538	0.01849
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02048	0.01988	0.02654
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01117	0.01080	0.01422
sky130_osu_sc_12T_ls__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01005	0.00977	0.01325
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02074	0.02006	0.02316
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01576	0.01537	0.01849
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02048	0.01989	0.02654
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01116	0.01080	0.01422

SKY130_OSU_SC_12T_LS__DFFSRx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffsr_1	46.39800
sky130_osu_sc_12T_ls__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ls__dffsr_1	0.00290	0.00295	0.00677	0.00914	0.69038	0.69210
sky130_osu_sc_12T_ls__dffsr_l	0.00290	0.00295	0.00677	0.00914	0.49640	0.49900

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ls__dffsr_1	0.00000	1.02397	1.43376
sky130_osu_sc_12T_ls__dffsr_l	0.00000	0.98231	1.39209

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)	0.70343	2.31106	17.81100
	QN->Q (FR)	0.05305	1.02012	12.35500
	RN->Q (RR)	0.56212	2.19138	17.80230
	SN->Q (FR)	0.51858	2.18548	18.72130
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RR)	0.70986	2.49903	17.92360
	QN->Q (FR)	0.06012	1.10034	12.26020
	RN->Q (RR)	0.56843	2.37778	17.91560
	SN->Q (FR)	0.52149	2.36693	18.80220

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)	0.78585	2.45862	18.90620
	QN->Q (RF)	0.04212	0.81166	9.90154
	RN->Q (FF)	0.50758	2.25525	19.57950
sky130_osu_sc_12T_ls__dffsr_l	CK->Q (RF)	0.79445	2.68992	19.33710
	QN->Q (RF)	0.04836	0.89534	10.13040
	RN->Q (FF)	0.51835	2.49171	20.00470

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)	0.70748	1.54930	8.64731
	RN->QN (FR)	0.43163	1.34748	9.31931
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RR)	0.70261	1.61867	8.66073
	RN->QN (FR)	0.42901	1.42025	9.32749

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)	0.61119	1.30446	6.43395
	RN->QN (RF)	0.47000	1.18589	6.42597
	SN->QN (FF)	0.42652	1.18029	7.34027
sky130_osu_sc_12T_ls__dffsr_l	CK->QN (RF)	0.60870	1.37074	6.69791
	RN->QN (RF)	0.46714	1.25221	6.68860
	SN->QN (FF)	0.42066	1.24154	7.57599

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)	-0.17373	-0.17847	-0.45856
	setup	CK (R)	0.52206	0.50369	1.48320
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.17528	-0.17769	-0.45710
	setup	CK (R)	0.51977	0.49989	1.48098

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)	-0.30687	-0.57270	-3.65283
	setup	CK (R)	0.38178	0.59182	3.68227
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.30356	-0.57018	-3.65082
	setup	CK (R)	0.38121	0.59182	3.68325

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)	-0.17373	-0.17847	-0.45856
	setup	CK (R)	0.52206	0.50369	1.48320
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.17528	-0.17769	-0.45710
	setup	CK (R)	0.51977	0.49989	1.48098

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)	-0.30687	-0.57270	-3.65283
	setup	CK (R)	0.38178	0.59182	3.68227
sky130_osu_sc_12T_ls__dffsr_l	hold	CK (R)	-0.30356	-0.57018	-3.65082
	setup	CK (R)	0.38121	0.59182	3.68325

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)	0.38685	0.38971	1.39241
	removal	CK (R)	-0.05549	-0.06447	-0.11528
	hold	SN (R)	-0.41217	-0.62652	-2.81166
	setup	SN (R)	0.45694	0.67501	5.04952
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.38597	0.38937	1.39148
	removal	CK (R)	-0.05549	-0.06447	-0.11528
	hold	SN (R)	-0.40569	-0.61754	-2.76131
	setup	SN (R)	0.45545	0.66908	4.98441

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)	0.38685	0.38971	1.39241
	removal	CK (R)	-0.05549	-0.06447	-0.11528
	hold	SN (R)	-0.41217	-0.62652	-2.81166
	hold	SN (R)	-0.41234	-0.62883	-2.82911
	setup	SN (R)	0.45394	0.67186	4.89866
	setup	SN (R)	0.45694	0.67501	5.04952
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.38597	0.38937	1.39148
	removal	CK (R)	-0.05549	-0.06447	-0.11528
	hold	SN (R)	-0.40711	-0.61754	-2.76131
	hold	SN (R)	-0.40569	-0.61860	-2.78322
	setup	SN (R)	0.45545	0.65945	4.80549
	setup	SN (R)	0.43106	0.66908	4.98441

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 ()	0.33452	0.55186	13.33370
	min_pulse_width	RN ()	0.34694	0.55186	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	RN ()	0.33324	0.54968	13.33370
	min_pulse_width	RN ()	0.33736	0.54968	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)	0.10380	0.12946	3.00138
	removal	CK (R)	-0.04277	-0.08902	-0.54555
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.10049	0.12746	2.86495
	removal	CK (R)	-0.04107	-0.08933	-0.54514

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)	0.10380	0.12946	3.00138
	removal	CK (R)	-0.04277	-0.08902	-0.54555
sky130_osu_sc_12T_ls__dffsr_l	recovery	CK (R)	0.10049	0.12746	2.86495
	removal	CK (R)	-0.04107	-0.08933	-0.54514

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 ()	0.39883	0.63258	13.33370
	min_pulse_width	SN ()	0.41454	0.63476	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	SN ()	0.39815	0.62385	13.33370
	min_pulse_width	SN ()	0.38903	0.62821	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 ()	0.32892	0.53223	13.33370
	min_pulse_width	CK ()	0.38473	0.53223	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.31696	0.53223	13.33370
	min_pulse_width	CK ()	0.38075	0.53223	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 ()	0.66518	0.70239	13.33370
	min_pulse_width	CK ()	0.34885	0.53223	13.33370
sky130_osu_sc_12T_ls__dffsr_l	min_pulse_width	CK ()	0.66457	0.70457	13.33370
	min_pulse_width	CK ()	0.34885	0.53223	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	0.00837	0.00773	0.00703
	RN	0.01523	0.01477	0.01230
	SN	-0.00089	-0.03690	-0.44184
	SN	0.01698	0.01650	0.01395
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00765	0.00707	0.00845
	RN	0.01450	0.01412	0.01371
	SN	-0.00089	-0.03027	-0.31769
	SN	0.01626	0.01584	0.01524

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	0.00899	0.00856	0.00735
	RN	-0.00089	-0.03690	-0.44184
	RN	0.01812	0.01771	0.01631
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00824	0.00779	0.00726
	RN	-0.00089	-0.03027	-0.31769
	RN	0.01736	0.01691	0.01617

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	0.00898	0.00857	0.00726
	RN	-0.00089	-0.03695	-0.44292
	RN	0.01812	0.01770	0.01620
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00823	0.00779	0.00718
	RN	-0.00089	-0.03037	-0.31935
	RN	0.01736	0.01691	0.01612

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	0.00834	0.00770	0.00695
	RN	0.01520	0.01475	0.01222
	SN	-0.00089	-0.03695	-0.44289
	SN	0.01696	0.01647	0.01396
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00763	0.00704	0.00826
	RN	0.01447	0.01410	0.01352
	SN	-0.00089	-0.03037	-0.31934
	SN	0.01623	0.01581	0.01531

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	-0.00199	-0.00202	-0.00204
	(!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)	0.01031	0.00990	0.01217
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00376	0.00338	0.00571
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00373	0.00335	0.00568
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00378	0.00339	0.00573
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00199	-0.00202	-0.00204
	(!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)	0.01031	0.00990	0.01217
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00376	0.00338	0.00571
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00373	0.00335	0.00568
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00377	0.00339	0.00573

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	0.00206	0.00205	0.00204
	(!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)	0.01491	0.01468	0.01673
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00688	0.00673	0.00895
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00690	0.00674	0.00897
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00686	0.00671	0.00893
sky130_osu_sc_12T_ls__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00206	0.00205	0.00204
	(!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)	0.01491	0.01468	0.01673
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00688	0.00673	0.00895
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00690	0.00674	0.00897
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00685	0.00671	0.00893

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)	0.00208	0.00170	0.00515
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00894	0.00836	0.01170
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)	0.00208	0.00170	0.00515
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00894	0.00836	0.01170

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)	0.00708	0.00687	0.01051
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01394	0.01349	0.01677
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)	0.00708	0.00687	0.01051
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01394	0.01348	0.01677

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)	-0.00505	-0.00507	-0.00508
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00536	-0.00546	-0.00546
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00507	-0.00514	-0.00511
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00262	0.00220	0.00479
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)	-0.00505	-0.00507	-0.00508
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00536	-0.00546	-0.00546
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00507	-0.00514	-0.00511
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00262	0.00223	0.00479

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)	0.00510	0.00514	0.00511
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00544	0.00548	0.00546
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00513	0.00514	0.00513
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01123	0.01096	0.01286
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)	0.00509	0.00514	0.00511
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00544	0.00548	0.00546
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00513	0.00514	0.00513
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01123	0.01096	0.01286

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)	-0.00053	-0.00108	0.00239
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00474	0.00403	0.00748
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00470	0.00400	0.00745
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00041	-0.00096	0.00256
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00266	0.00165	0.00852
sky130_osu_sc_12T_ls__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00054	-0.00108	0.00239
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00474	0.00403	0.00748
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00470	0.00400	0.00745
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00041	-0.00096	0.00256
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00266	0.00165	0.00852

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)	0.02321	0.02256	0.02563
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01020	0.00993	0.01341
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01611	0.01576	0.01887
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01616	0.01580	0.01892
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02253	0.02190	0.02833
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01118	0.01082	0.01420
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01380	0.01335	0.02010
sky130_osu_sc_12T_ls__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02321	0.02256	0.02563
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01020	0.00993	0.01341
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01611	0.01576	0.01887
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01616	0.01580	0.01892
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02253	0.02190	0.02833
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01118	0.01082	0.01420
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01380	0.01335	0.02010

SKY130_OSU_SC_12T_LS__DFFSx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dffs_1	38.58360
sky130_osu_sc_12T_ls__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ls__dffs_1	0.00291	0.00544	0.00906	0.67289	0.67529
sky130_osu_sc_12T_ls__dffs_l	0.00291	0.00544	0.00906	0.49725	0.50102

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dffs_1	0.00000	0.71197	0.75887
sky130_osu_sc_12T_ls__dffs_l	0.00000	0.67030	0.71720

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)	0.49078	2.04573	17.23200
	QN->Q (FR)	0.05543	1.03904	12.50290
	SN->Q (FR)	0.35393	2.02935	18.13480
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RR)	0.49639	2.24598	17.63690
	QN->Q (FR)	0.06023	1.09942	12.25990
	SN->Q (FR)	0.35813	2.22364	18.48620

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)	0.76660	2.43545	18.65760
	QN->Q (RF)	0.04224	0.80329	9.75562
sky130_osu_sc_12T_ls__dffs_l	CK->Q (RF)	0.76631	2.66099	19.30680
	QN->Q (RF)	0.04845	0.89479	10.13090

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)	0.68616	1.53342	8.59085
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RR)	0.67305	1.58967	8.63324

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)	0.40584	1.04407	6.00476
	SN->QN (FF)	0.26830	1.02814	6.90664
sky130_osu_sc_12T_ls__dffs_l	CK->QN (RF)	0.40359	1.12188	6.41427
	SN->QN (FF)	0.26454	1.10048	7.26080

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)	-0.12793	-0.13707	-0.32523
	setup	CK (R)	0.34862	0.34502	1.36714
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.12626	-0.13609	-0.32514
	setup	CK (R)	0.34561	0.34416	1.36806

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)	-0.27573	-0.54654	-3.54333
	setup	CK (R)	0.36215	0.57020	3.58356
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.27666	-0.54711	-3.54233
	setup	CK (R)	0.36208	0.57020	3.58354

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)	-0.12793	-0.13707	-0.32523
	setup	CK (R)	0.34862	0.34502	1.36714
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.12626	-0.13609	-0.32514
	setup	CK (R)	0.34561	0.34416	1.36806

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)	-0.27573	-0.54654	-3.54333
	setup	CK (R)	0.36215	0.57020	3.58356
sky130_osu_sc_12T_ls__dffs_l	hold	CK (R)	-0.27666	-0.54711	-3.54233
	setup	CK (R)	0.36208	0.57020	3.58354

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)	0.11583	0.15174	1.95119
	removal	CK (R)	-0.05274	-0.11018	-0.85581
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.11613	0.15149	1.81197
	removal	CK (R)	-0.05274	-0.11018	-0.85581

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)	0.11583	0.15174	1.95119
	removal	CK (R)	-0.05274	-0.11018	-0.85581
sky130_osu_sc_12T_ls__dffs_l	recovery	CK (R)	0.11613	0.15149	1.81197
	removal	CK (R)	-0.05274	-0.11018	-0.85581

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 ()	0.23237	0.58895	13.33370
	min_pulse_width	SN ()	0.23763	0.59113	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	SN ()	0.23019	0.57149	13.33370
	min_pulse_width	SN ()	0.22968	0.57586	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 ()	0.22129	0.53223	13.33370
	min_pulse_width	CK ()	0.38473	0.53223	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.21332	0.53223	13.33370
	min_pulse_width	CK ()	0.37277	0.53223	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 ()	0.49094	0.56277	13.33370
	min_pulse_width	CK ()	0.33291	0.53223	13.33370
sky130_osu_sc_12T_ls__dffs_l	min_pulse_width	CK ()	0.49094	0.56277	13.33370
	min_pulse_width	CK ()	0.33291	0.53223	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	0.00672	0.00603	0.00554
	SN	-0.00089	-0.03634	-0.43065
	SN	0.01422	0.01366	0.01155
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00595	0.00532	0.00680
	SN	-0.00089	-0.03030	-0.31824
	SN	0.01344	0.01296	0.01274

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	0.00767	0.00712	0.00480
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00691	0.00643	0.00597

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	0.00767	0.00712	0.00476
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00691	0.00643	0.00588

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00670	0.00602	0.00550
	SN	-0.00089	-0.03641	-0.43213
	SN	0.01419	0.01364	0.01141
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00594	0.00531	0.00664
	SN	-0.00089	-0.03044	-0.32063
	SN	0.01343	0.01293	0.01269

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	-0.00203	-0.00205	-0.00206
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00775	0.00731	0.00960
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00334	0.00294	0.00532
sky130_osu_sc_12T_ls__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00203	-0.00206	-0.00206
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00775	0.00731	0.00960
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00334	0.00294	0.00532

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	0.00208	0.00207	0.00206
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01273	0.01247	0.01466
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00636	0.00620	0.00849
sky130_osu_sc_12T_ls__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00208	0.00207	0.00206
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01273	0.01247	0.01466
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00636	0.00620	0.00849

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)	-0.00362	-0.00363	-0.00364
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00262	0.00223	0.00413
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)	-0.00362	-0.00363	-0.00364
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00262	0.00223	0.00413

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)	0.00366	0.00370	0.00366
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00758	0.00726	0.00927
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)	0.00366	0.00370	0.00366
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00757	0.00726	0.00927

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)	-0.00048	-0.00102	0.00246
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00047	-0.00104	0.00252
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00229	0.00129	0.00829
sky130_osu_sc_12T_ls__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00048	-0.00102	0.00246
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00047	-0.00104	0.00251
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00229	0.00129	0.00829

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)	0.02051	0.01986	0.02297
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01005	0.00978	0.01326
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02020	0.01952	0.02607
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01111	0.01076	0.01416
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01312	0.01267	0.01956
sky130_osu_sc_12T_ls__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02051	0.01986	0.02297
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01005	0.00978	0.01326
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02020	0.01952	0.02607
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01111	0.01076	0.01416
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01311	0.01267	0.01956

SKY130_OSU_SC_12T_LS__DFFx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__dff_1	32.23440
sky130_osu_sc_12T_ls__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ls__dff_1	0.00306	0.00895	0.63718
sky130_osu_sc_12T_ls__dff_l	0.00306	0.00895	0.47777

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__dff_1	0.00000	0.79759	0.91202
sky130_osu_sc_12T_ls__dff_l	0.00000	0.75592	0.87035

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)	0.43097	1.24428	8.20540
sky130_osu_sc_12T_ls__dff_l	CK->Q (RR)	0.43254	1.31611	8.22898

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)	0.60987	1.24256	6.03396
sky130_osu_sc_12T_ls__dff_l	CK->Q (RF)	0.61117	1.32827	6.48295

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)	-0.12599	-0.13928	-0.36482
	setup	CK (R)	0.30383	0.30506	1.35742
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.12277	-0.13961	-0.36213
	setup	CK (R)	0.30354	0.30494	1.36416

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)	-0.25110	-0.54509	-3.55619
	setup	CK (R)	0.29455	0.56326	3.59832
sky130_osu_sc_12T_ls__dff_l	hold	CK (R)	-0.24980	-0.54583	-3.56025
	setup	CK (R)	0.29455	0.56326	3.59832

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 ()	0.20534	0.53223	13.33370
	min_pulse_width	CK ()	0.33690	0.53223	13.33370
sky130_osu_sc_12T_ls__dff_l	min_pulse_width	CK ()	0.19737	0.53223	13.33370
	min_pulse_width	CK ()	0.33291	0.53223	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 ()**	0.44033	0.53441	13.33370
	min_pulse_width	**CK ()**	0.24122	0.53223	13.33370
sky130_osu_sc_12T_ls__dff_l	**min_pulse_width**	**CK ()**	0.44054	0.53223	13.33370
	min_pulse_width	**CK ()**	0.24122	0.53223	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	0.01419	0.01307	0.01997
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01263	0.01146	0.01838

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	0.01575	0.01511	0.01856
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01423	0.01357	0.01695

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	-0.00184	-0.00200	-0.00201
	!CK	0.00000	0.00000	0.00000
	!CK	0.00726	0.00679	0.00911
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00184	-0.00200	-0.00201
	!CK	0.00000	0.00000	0.00000
	!CK	0.00726	0.00679	0.00911

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	0.00200	0.00202	0.00201
	!CK	0.00000	0.00000	0.00000
	!CK	0.01324	0.01293	0.01529
sky130_osu_sc_12T_ls__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00200	0.00202	0.00201
	!CK	0.00000	0.00000	0.00000
	!CK	0.01324	0.01293	0.01529

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)	-0.00052	-0.00105	0.00244
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00046	-0.00100	0.00253
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00052	-0.00105	0.00244
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00046	-0.00100	0.00253

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)	0.01000	0.00976	0.01324
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01999	0.01935	0.02258
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02054	0.01988	0.02663
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01105	0.01066	0.01411
sky130_osu_sc_12T_ls__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01000	0.00977	0.01324
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01999	0.01935	0.02258
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02054	0.01988	0.02663
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01104	0.01071	0.01411

SKY130_OSU_SC_12T_LS__INVx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ls__inv_1	0.00298	0.63133
sky130_osu_sc_12T_ls__inv_10	0.02679	6.40795
sky130_osu_sc_12T_ls__inv_2	0.00555	1.29638
sky130_osu_sc_12T_ls__inv_3	0.00822	1.91413
sky130_osu_sc_12T_ls__inv_4	0.01084	2.57746
sky130_osu_sc_12T_ls__inv_6	0.01623	3.84844
sky130_osu_sc_12T_ls__inv_8	0.02150	5.11214
sky130_osu_sc_12T_ls__inv_l	0.00227	0.46621

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__inv_1	0.00000	0.10886	0.14286
sky130_osu_sc_12T_ls__inv_10	0.00000	0.30215	0.31837
sky130_osu_sc_12T_ls__inv_2	0.00000	0.06043	0.06367
sky130_osu_sc_12T_ls__inv_3	0.00000	0.16929	0.20005
sky130_osu_sc_12T_ls__inv_4	0.00000	0.12086	0.12735
sky130_osu_sc_12T_ls__inv_6	0.00000	0.18129	0.19102
sky130_osu_sc_12T_ls__inv_8	0.00000	0.24172	0.25470
sky130_osu_sc_12T_ls__inv_l	0.00000	0.08803	0.11409

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)**	0.05424	0.98961	11.70790
sky130_osu_sc_12T_ls__inv_10	**A->Y (FR)**	0.05047	0.64082	11.77350
sky130_osu_sc_12T_ls__inv_2	**A->Y (FR)**	0.03930	0.83381	11.68910
sky130_osu_sc_12T_ls__inv_3	**A->Y (FR)**	0.04065	0.77352	11.70230
sky130_osu_sc_12T_ls__inv_4	**A->Y (FR)**	0.03872	0.72962	11.69100
sky130_osu_sc_12T_ls__inv_6	**A->Y (FR)**	0.04080	0.68327	11.69100
sky130_osu_sc_12T_ls__inv_8	**A->Y (FR)**	0.04508	0.65625	11.69210
sky130_osu_sc_12T_ls__inv_l	**A->Y (FR)**	0.06077	1.05216	11.58630

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)**	0.03998	0.74802	8.98285
sky130_osu_sc_12T_ls__inv_10	**A->Y (RF)**	0.04209	0.51266	9.23983
sky130_osu_sc_12T_ls__inv_2	**A->Y (RF)**	0.03067	0.65674	9.11394
sky130_osu_sc_12T_ls__inv_3	**A->Y (RF)**	0.03194	0.61779	9.17556
sky130_osu_sc_12T_ls__inv_4	**A->Y (RF)**	0.03052	0.58754	9.19278
sky130_osu_sc_12T_ls__inv_6	**A->Y (RF)**	0.03395	0.55277	9.21209
sky130_osu_sc_12T_ls__inv_8	**A->Y (RF)**	0.03779	0.52834	9.21680
sky130_osu_sc_12T_ls__inv_l	**A->Y (RF)**	0.04743	0.84505	9.46433

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	0.00347	0.00346	0.00382
sky130_osu_sc_12T_ls__inv_10	A	0.00000	0.00000	0.00000
	A	0.02859	0.02943	0.03389
sky130_osu_sc_12T_ls__inv_2	A	0.00000	0.00000	0.00000
	A	0.00598	0.00605	0.00691
sky130_osu_sc_12T_ls__inv_3	A	0.00000	0.00000	0.00000
	A	0.00920	0.00931	0.01060
sky130_osu_sc_12T_ls__inv_4	A	0.00000	0.00000	0.00000
	A	0.01171	0.01197	0.01369
sky130_osu_sc_12T_ls__inv_6	A	0.00000	0.00000	0.00000
	A	0.01737	0.01795	0.02050
sky130_osu_sc_12T_ls__inv_8	A	0.00000	0.00000	0.00000
	A	0.02299	0.02358	0.02715
sky130_osu_sc_12T_ls__inv_l	A	0.00000	0.00000	0.00000
	A	0.00265	0.00255	0.00287

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	-0.00055	-0.00060	-0.00025
sky130_osu_sc_12T_ls__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01017	-0.00933	-0.00502
sky130_osu_sc_12T_ls__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00188	-0.00185	-0.00109
sky130_osu_sc_12T_ls__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00243	-0.00241	-0.00123
sky130_osu_sc_12T_ls__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00382	-0.00362	-0.00207
sky130_osu_sc_12T_ls__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00587	-0.00568	-0.00306
sky130_osu_sc_12T_ls__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00798	-0.00763	-0.00403
sky130_osu_sc_12T_ls__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00039	-0.00043	-0.00024

SKY130_OSU_SC_12T_LS__MUX2

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ls__mux2_1	0.12301	0.12292	0.00612	0.12154

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__mux2_1	0.00000	0.37395	0.47256

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)	-	0.02787	0.40955	3.60167
	A1->Y (RR)	-	0.03410	0.41474	3.60748
	S0->Y (RR)	(!A0 * A1)	0.09332	0.47998	1.97178
	S0->Y (FR)	(A0 * !A1)	0.05673	0.55845	3.83731

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)	-	0.03107	0.39182	3.36812
	A1->Y (FF)	-	0.02621	0.38734	3.36250
	S0->Y (FF)	(!A0 * A1)	0.12549	0.54016	2.47135
	S0->Y (RF)	(A0 * !A1)	0.04269	0.46149	3.20881

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	-	-0.00331	-0.00332	-0.00331
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00226	-0.00227	-0.00226
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00434	0.00426	0.00815
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00216	-0.00262	0.00126

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	-	0.00331	0.00332	0.00332
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00227	0.00228	0.00228
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00070	0.00026	0.00425
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00913	0.00900	0.01267

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)	-0.00084	-0.00083	-0.00083

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)	0.00084	0.00083	0.00083

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)	-0.00099	-0.00099	-0.00099

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)	0.00099	0.00099	0.00100

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)	-0.00077	-0.00119	0.00276
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00073	-0.00118	0.00276

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)	0.00707	0.00686	0.01065
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00641	0.00624	0.01019

SKY130_OSU_SC_12T_LS__NAND2x

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__nand2_1	6.34920
sky130_osu_sc_12T_ls__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nand2_1	0.00296	0.00296	0.51758
sky130_osu_sc_12T_ls__nand2_l	0.00223	0.00226	0.37797

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nand2_1	0.00000	0.08014	0.11438
sky130_osu_sc_12T_ls__nand2_l	0.00000	0.07024	0.09496

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)	0.05720	0.92749	10.49710
	B->Y (FR)	0.06471	0.91099	10.24070
sky130_osu_sc_12T_ls__nand2_l	A->Y (FR)	0.06170	0.98012	10.31140
	B->Y (FR)	0.07148	0.98933	10.30940

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)	0.07192	1.00870	11.12920
	B->Y (RF)	0.08013	0.97956	10.55170
sky130_osu_sc_12T_ls__nand2_l	A->Y (RF)	0.08151	1.13163	11.50360
	B->Y (RF)	0.08963	1.10662	10.96480

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	0.00366	0.00366	0.00404
	B	0.00000	0.00000	0.00000
	B	0.00455	0.00449	0.00492
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00268	0.00267	0.00294
	B	0.00000	0.00000	0.00000
	B	0.00328	0.00325	0.00352

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	-0.00032	-0.00041	-0.00006
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00042	-0.00017
sky130_osu_sc_12T_ls__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00020	-0.00025	-0.00007
	B	0.00000	0.00000	0.00000
	B	-0.00019	-0.00027	-0.00015

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)	-0.00230	-0.00232	-0.00233
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00158	-0.00160	-0.00161

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)	0.00233	0.00235	0.00234
sky130_osu_sc_12T_ls__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00162	0.00162	0.00161

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)	-0.00218	-0.00219	-0.00218
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00152	-0.00153	-0.00152

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)	0.00220	0.00221	0.00219
sky130_osu_sc_12T_ls__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00154	0.00154	0.00153

SKY130_OSU_SC_12T_LS__NOR2x

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__nor2_1	6.34920
sky130_osu_sc_12T_ls__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__nor2_1	0.00291	0.00320	0.31982
sky130_osu_sc_12T_ls__nor2_l	0.00214	0.00236	0.24272

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__nor2_1	0.00000	0.13238	0.18041
sky130_osu_sc_12T_ls__nor2_l	0.00000	0.10897	0.15075

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)	0.12789	1.19885	11.01550
	B->Y (FR)	0.10327	1.18671	11.42210
sky130_osu_sc_12T_ls__nor2_l	A->Y (FR)	0.13068	1.27943	10.94300
	B->Y (FR)	0.11179	1.27060	11.27940

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)	0.05369	0.63473	6.57720
	B->Y (RF)	0.04258	0.62114	6.55330
sky130_osu_sc_12T_ls__nor2_l	A->Y (RF)	0.06010	0.70537	7.04272
	B->Y (RF)	0.04946	0.69400	7.02183

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	0.00484	0.00477	0.00504
	B	0.00000	0.00000	0.00000
	B	0.00376	0.00368	0.00422
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00340	0.00336	0.00352
	B	0.00000	0.00000	0.00000
	B	0.00276	0.00272	0.00244

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00054	0.00038	0.00085
	B	0.00000	0.00000	0.00000
	B	-0.00043	-0.00044	0.00003
sky130_osu_sc_12T_ls__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00038	0.00026	0.00055
	B	0.00000	0.00000	0.00000
	B	-0.00026	-0.00029	-0.00004

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)	-0.00186	-0.00203	-0.00203
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00124	-0.00136	-0.00135

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)	0.00202	0.00204	0.00203
sky130_osu_sc_12T_ls__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00135	0.00136	0.00135

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)	-0.00091	-0.00092	-0.00091
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00064	-0.00063	-0.00063

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)	0.00097	0.00097	0.00093
sky130_osu_sc_12T_ls__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00067	0.00067	0.00065

SKY130_OSU_SC_12T_LS__OAI21

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ls__oai21_l	0.00296	0.00305	0.00254	0.32148

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai21_l	0.00000	0.16343	0.29450

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)	0.14318	1.23444	11.51450
	A1->Y (FR)	0.17290	1.25199	11.11060
	B0->Y (FR)	0.07794	0.93936	9.48453

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)	0.09447	0.84701	7.97988
	A1->Y (RF)	0.11897	0.86131	7.91012
	B0->Y (RF)	0.07465	0.86516	8.65249

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	0.00512	0.00504	0.00548
	A1	0.00000	0.00000	0.00000
	A1	0.00625	0.00616	0.00639
	B0	0.00423	0.00419	0.00468

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	0.00026	0.00017	0.00044
	A1	0.00000	0.00000	0.00000
	A1	0.00124	0.00103	0.00131
	B0	0.00163	0.00155	0.00194

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)	-0.00092	-0.00093	-0.00092
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00204	-0.00206	-0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00211	-0.00211	-0.00211

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)	0.00098	0.00098	0.00094
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00204	0.00206	0.00205
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00211	0.00212	0.00211

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)	-0.00181	-0.00197	-0.00197
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00202	-0.00204	-0.00203
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00208	-0.00209	-0.00208

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)	0.00195	0.00197	0.00197
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00202	0.00204	0.00203
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00208	0.00210	0.00209

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)	-0.00165	-0.00166	-0.00170

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)	0.00171	0.00172	0.00171

SKY130_OSU_SC_12T_LS__OAI22

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ls__oai22_1	0.00278	0.00292	0.00310	0.00306	0.33009

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__oai22_1	0.00000	0.11554	0.25330

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)	0.18630	1.25749	11.12470
	A1->Y (FR)	0.16084	1.24614	11.53960
	B0->Y (FR)	0.11099	1.19468	11.48960
	B1->Y (FR)	0.13884	1.20628	11.07730

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)	0.15854	0.93217	8.20028
	A1->Y (RF)	0.12734	0.89603	8.14115
	B0->Y (RF)	0.11028	0.91696	8.81500
	B1->Y (RF)	0.14283	0.95171	8.87876

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	0.00802	0.00792	0.00815
	A1	0.00688	0.00677	0.00723
	B0	0.00508	0.00504	0.00549
	B1	0.00627	0.00621	0.00644

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ls__oai22_l	A0	0.00192	0.00173	0.00199
	A1	0.00102	0.00094	0.00116
	B0	0.00101	0.00093	0.00131
	B1	0.00194	0.00175	0.00214

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)	-0.00183	-0.00199	-0.00199
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00183	-0.00199	-0.00199
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00196	-0.00199	-0.00198
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00203	-0.00203	-0.00203

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)	0.00198	0.00199	0.00199
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00198	0.00199	0.00199
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00198	0.00199	0.00198
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00203	0.00204	0.00203

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)	-0.00089	-0.00089	-0.00089
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00089	-0.00090	-0.00089
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00196	-0.00197	-0.00196
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00202	-0.00203	-0.00202

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)	0.00095	0.00095	0.00091
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00095	0.00095	0.00091
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00196	0.00197	0.00196
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00203	0.00203	0.00203

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)	-0.00091	-0.00091	-0.00090
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00091	-0.00091	-0.00090
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00225	-0.00228	-0.00227
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00223	-0.00224	-0.00231

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)	0.00095	0.00096	0.00092
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00095	0.00097	0.00092
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00227	0.00228	0.00227
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00232	0.00233	0.00232

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)	-0.00181	-0.00199	-0.00197
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00181	-0.00198	-0.00197
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00229	-0.00232	-0.00232
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00226	-0.00229	-0.00235

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)	0.00197	0.00199	0.00197
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00197	0.00198	0.00197
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00232	0.00234	0.00232
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00237	0.00240	0.00236

SKY130_OSU_SC_12T_LS__OR2x

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__or2_1	0.00326	0.00304	0.65018
sky130_osu_sc_12T_ls__or2_2	0.00327	0.00304	1.31664
sky130_osu_sc_12T_ls__or2_4	0.00327	0.00304	2.61739
sky130_osu_sc_12T_ls__or2_8	0.00326	0.00304	5.13880
sky130_osu_sc_12T_ls__or2_l	0.00239	0.00225	0.47662

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__or2_1	0.00000	0.22694	0.26599
sky130_osu_sc_12T_ls__or2_2	0.00000	0.19713	0.25481
sky130_osu_sc_12T_ls__or2_4	0.00000	0.25918	0.31848
sky130_osu_sc_12T_ls__or2_8	0.00000	0.38329	0.44583
sky130_osu_sc_12T_ls__or2_l	0.00000	0.18668	0.22336

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)	0.13847	0.97529	8.04868
	B->Y (RR)	0.12070	0.92656	7.83998
sky130_osu_sc_12T_ls__or2_2	A->Y (RR)	0.14686	0.86953	8.16234
	B->Y (RR)	0.12861	0.82927	7.97500
sky130_osu_sc_12T_ls__or2_4	A->Y (RR)	0.18810	0.85653	8.58283
	B->Y (RR)	0.16926	0.82519	8.42750
sky130_osu_sc_12T_ls__or2_8	A->Y (RR)	0.26920	0.92298	9.15369
	B->Y (RR)	0.24992	0.90002	9.04017
sky130_osu_sc_12T_ls__or2_l	A->Y (RR)	0.14739	1.06781	8.27687
	B->Y (RR)	0.12998	1.02165	8.07481

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)	0.25560	0.95182	6.56841
	B->Y (FF)	0.21938	0.92501	6.48282
sky130_osu_sc_12T_ls__or2_2	A->Y (FF)	0.30802	0.96069	6.97490
	B->Y (FF)	0.27196	0.94203	6.95128
sky130_osu_sc_12T_ls__or2_4	A->Y (FF)	0.43848	1.08121	7.62072
	B->Y (FF)	0.40233	1.06171	7.66875
sky130_osu_sc_12T_ls__or2_8	A->Y (FF)	0.70040	1.36841	8.43980
	B->Y (FF)	0.66437	1.34789	8.60729
sky130_osu_sc_12T_ls__or2_l	A->Y (FF)	0.26160	1.02536	6.71377
	B->Y (FF)	0.22909	0.99795	6.59852

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	0.00380	0.00343	0.00637
	B	0.00000	0.00000	0.00000
	B	0.00284	0.00257	0.00591
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00622	0.00612	0.00901
	B	0.00000	0.00000	0.00000
	B	0.00524	0.00532	0.00855
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01175	0.01206	0.01495
	B	0.00000	0.00000	0.00000
	B	0.01071	0.01128	0.01441
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02293	0.02363	0.02738
	B	0.00000	0.00000	0.00000
	B	0.02178	0.02317	0.02688
sky130_osu_sc_12T_ls__or2_l	A	0.00000	0.00000	0.00000
	A	0.00282	0.00258	0.00444
	B	0.00000	0.00000	0.00000
	B	0.00217	0.00195	0.00413

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	0.00803	0.00785	0.01008
	B	0.00000	0.00000	0.00000
	B	0.00664	0.00671	0.01005
sky130_osu_sc_12T_ls__or2_2	A	0.00000	0.00000	0.00000
	A	0.00971	0.00993	0.01199
	B	0.00000	0.00000	0.00000
	B	0.00834	0.00871	0.01194
sky130_osu_sc_12T_ls__or2_4	A	0.00000	0.00000	0.00000
	A	0.01405	0.01475	0.01681
	B	0.00000	0.00000	0.00000
	B	0.01268	0.01349	0.01664
sky130_osu_sc_12T_ls__or2_8	A	0.00000	0.00000	0.00000
	A	0.02389	0.02402	0.02671
	B	0.00000	0.00000	0.00000
	B	0.02252	0.02272	0.02655
sky130_osu_sc_12T_ls__or2_1	A	0.00000	0.00000	0.00000
	A	0.00579	0.00568	0.00716
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00492	0.00724

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)	-0.00190	-0.00205	-0.00205
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00190	-0.00205	-0.00204
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00190	-0.00205	-0.00205
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00190	-0.00205	-0.00205
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00125	-0.00137	-0.00136

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)	0.00203	0.00205	0.00205
sky130_osu_sc_12T_ls__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00203	0.00205	0.00204
sky130_osu_sc_12T_ls__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00203	0.00206	0.00205
sky130_osu_sc_12T_ls__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00203	0.00206	0.00205
sky130_osu_sc_12T_ls__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00136	0.00137	0.00136

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)	-0.00092	-0.00093	-0.00092
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00094	-0.00092
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00092	-0.00094	-0.00092
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00091	-0.00093	-0.00092
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00062	-0.00063	-0.00062

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)	0.00099	0.00099	0.00094
sky130_osu_sc_12T_ls__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00099	0.00099	0.00094
sky130_osu_sc_12T_ls__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00099	0.00099	0.00094
sky130_osu_sc_12T_ls__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00099	0.00099	0.00094
sky130_osu_sc_12T_ls__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00067	0.00067	0.00064

SKY130_OSU_SC_12T_LS__TBUFIx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__tbufi_1	8.30280
sky130_osu_sc_12T_ls__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tbufi_1	0.00317	0.00407	0.32713
sky130_osu_sc_12T_ls__tbufi_l	0.00237	0.00303	0.24243

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tbufi_1	0.00000	0.19662	0.28573
sky130_osu_sc_12T_ls__tbufi_l	0.00000	0.16056	0.22818

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)	0.09627	1.17349	11.41120
	OE->Y (FR)	0.08620	0.35745	4.68819
	OE->Y (RR)	0.16371	1.11710	7.71509
sky130_osu_sc_12T_ls__tbufi_l	A->Y (FR)	0.10746	1.26739	11.26780
	OE->Y (FR)	0.08386	0.35733	4.68812
	OE->Y (RR)	0.17221	1.23827	8.02412

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)	0.07026	0.84885	8.55150
	OE->Y (FF)	0.08875	0.35831	4.68815
	OE->Y (RF)	0.06180	0.80423	7.92272
sky130_osu_sc_12T_ls__tbufi_l	A->Y (RF)	0.08068	0.95265	8.91703
	OE->Y (FF)	0.08578	0.35738	4.68814
	OE->Y (RF)	0.07111	0.90983	8.33133

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	0.00353	0.00347	0.00394
	OE	0.00000	0.00000	0.00000
	OE	0.00354	0.00318	0.00712
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00257	0.00219
	OE	0.00000	0.00000	0.00000
	OE	0.00250	0.00221	0.00479

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	-0.00042	-0.00044	-0.00004
	OE	0.00000	0.00000	0.00000
	OE	0.00224	0.00185	0.00593
sky130_osu_sc_12T_ls__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00024	-0.00029	-0.00006
	OE	0.00000	0.00000	0.00000
	OE	0.00153	0.00124	0.00389

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)	-0.00160	-0.00161	-0.00160
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00139	-0.00140	-0.00139
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00113	-0.00114	-0.00114
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00100	-0.00101	-0.00100

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)	0.00160	0.00161	0.00160
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00143	0.00144	0.00142
sky130_osu_sc_12T_ls__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00113	0.00114	0.00114
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00103	0.00103	0.00101

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)	0.00133	0.00100	0.00503
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00114	0.00080	0.00484
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00089	0.00067	0.00325
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00076	0.00051	0.00311

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)	0.00411	0.00384	0.00776
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00427	0.00402	0.00786
sky130_osu_sc_12T_ls__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00305	0.00286	0.00550
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00316	0.00297	0.00559

SKY130_OSU_SC_12T_LS__TNBUFIx

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__tnbufi_1	8.30280
sky130_osu_sc_12T_ls__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ls__tnbufi_1	0.00316	0.00480	0.32992
sky130_osu_sc_12T_ls__tnbufi_l	0.00227	0.00353	0.24251

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__tnbufi_1	0.00000	0.21929	0.25723
sky130_osu_sc_12T_ls__tnbufi_l	0.00000	0.17794	0.20903

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)	0.09745	1.17774	11.47150
	OE->Y (RR)	0.04964	0.35715	4.68849
	OE->Y (FR)	0.11308	1.18157	11.04370
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (FR)	0.10587	1.26516	11.27670
	OE->Y (RR)	0.05505	0.35685	4.68814
	OE->Y (FR)	0.11880	1.26857	10.92920

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)	0.06885	0.85093	8.58890
	OE->Y (RF)	0.04890	0.35716	4.68852
	OE->Y (FF)	0.11677	0.82920	5.71747
sky130_osu_sc_12T_ls__tnbufi_l	A->Y (RF)	0.07713	0.95038	8.91618
	OE->Y (RF)	0.05518	0.35685	4.68815
	OE->Y (FF)	0.12904	0.91614	5.68228

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	0.00365	0.00358	0.00406
	OE	0.00000	0.00000	0.00000
	OE	0.00865	0.00859	0.01284
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00266	0.00263	0.00247
	OE	0.00000	0.00000	0.00000
	OE	0.00638	0.00629	0.00915

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	-0.00058	-0.00059	-0.00019
	OE	0.00000	0.00000	0.00000
	OE	0.00747	0.00742	0.01147
sky130_osu_sc_12T_ls__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00041	-0.00044	-0.00021
	OE	0.00000	0.00000	0.00000
	OE	0.00553	0.00545	0.00822

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)	-0.00133	-0.00134	-0.00133
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00114	-0.00115	-0.00114
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00089	-0.00090	-0.00090
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00078	-0.00078	-0.00077

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)	0.00133	0.00134	0.00133
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00117	0.00118	0.00116
sky130_osu_sc_12T_ls__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00089	0.00090	0.00090
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00080	0.00080	0.00079

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)	-0.00236	-0.00284	0.00130
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00224	-0.00277	0.00133
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00158	-0.00195	0.00070
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00152	-0.00194	0.00071

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)	0.00643	0.00640	0.01059
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00632	0.00629	0.01048
sky130_osu_sc_12T_ls__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00481	0.00475	0.00754
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00473	0.00465	0.00748

SKY130_OSU_SC_12T_LS__XNOR2

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xnor2_l	0.00634	0.00545	0.34044

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xnor2_l	0.00000	0.34474	0.37942

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	0.20901	1.19280	8.08968
	A->Y (FR)	!B	0.13055	1.22241	11.65920
	B->Y (RR)	A	0.17219	1.15887	8.05562
	B->Y (FR)	!A	0.15427	1.23027	11.23820

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	0.20930	0.98930	6.28068
	A->Y (RF)	!B	0.09327	0.84335	8.14074
	B->Y (FF)	A	0.17593	0.95609	6.24785
	B->Y (RF)	!A	0.11657	0.87304	8.17322

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	0.00373	0.00325	0.00704
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00887	0.00864	0.01302
	B	A	0.00000	0.00000	0.00000
	B	A	0.00158	0.00134	0.00529
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00946	0.00926	0.01353

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	0.01037	0.00990	0.01368
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00237	0.00189	0.00615
	B	A	0.00000	0.00000	0.00000
	B	A	0.00939	0.00937	0.01332
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00298	0.00243	0.00673

SKY130_OSU_SC_12T_LS__XOR2

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ls__xor2_l	0.00635	0.00550	0.32220

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ls__xor2_l	0.00000	0.34474	0.44409

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	0.21146	1.19034	7.96012
	A->Y (FR)	B	0.15623	1.22616	11.09680
	B->Y (RR)	!A	0.17918	1.16685	7.93872
	B->Y (FR)	A	0.17012	1.24394	11.11320

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	0.18921	0.95047	6.00560
	A->Y (RF)	B	0.10562	0.89054	8.53290
	B->Y (FF)	!A	0.18080	0.94714	6.01900
	B->Y (RF)	A	0.11251	0.85623	7.91877

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	0.01020	0.00993	0.01413
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00211	0.00141	0.00524
	B	A	0.00000	0.00000	0.00000
	B	A	0.01039	0.01019	0.01442
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00148	0.00118	0.00514

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	0.00200	0.00136	0.00572
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01071	0.01054	0.01431
	B	A	0.00000	0.00000	0.00000
	B	A	0.00204	0.00143	0.00568
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00952	0.00954	0.01345

SKY130_OSU_SC_12T_LS_x

sky130_osu_sc_12T_ls_ss_1P60_150C.ccs
Cell Library: Process , Voltage 1.60,
Temp 150.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ls__ant	4.39560
sky130_osu_sc_12T_ls__tiehi	4.39560
sky130_osu_sc_12T_ls__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ls__ant	0.17280
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	67781.50000	135563.00000
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
	-0.00164	0.01599	0.22266

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
	1.18062	1.11447	0.27700