sky130_osu_sc_12T_ms_tt_1P62_25C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_MS__ADDFx
SKY130_OSU_SC_12T_MS__ADDHx
SKY130_OSU_SC_12T_MS__AND2x
SKY130_OSU_SC_12T_MS__AOI21
SKY130_OSU_SC_12T_MS__AOI22
SKY130_OSU_SC_12T_MS__BUFx
SKY130_OSU_SC_12T_MS__DFFNRx
SKY130_OSU_SC_12T_MS__DFFRx
SKY130_OSU_SC_12T_MS__DFFSRx
SKY130_OSU_SC_12T_MS__DFFSx
SKY130_OSU_SC_12T_MS__DFFx
SKY130_OSU_SC_12T_MS__INVx
SKY130_OSU_SC_12T_MS__MUX2
SKY130_OSU_SC_12T_MS__NAND2x
SKY130_OSU_SC_12T_MS__NOR2x
SKY130_OSU_SC_12T_MS__OAI21
SKY130_OSU_SC_12T_MS__OAI22
SKY130_OSU_SC_12T_MS__OR2x
SKY130_OSU_SC_12T_MS__TBUFIx
SKY130_OSU_SC_12T_MS__TNBUFIx
SKY130_OSU_SC_12T_MS__XNOR2
SKY130_OSU_SC_12T_MS__XOR2
SKY130_OSU_SC_12T_MS_x

SKY130_OSU_SC_12T_MS__ADDFx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__addf_1	31.25760
sky130_osu_sc_12T_ms__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_ms__addf_1	0.01084	0.01090	0.00833	1.09711	0.47891	0.97770
sky130_osu_sc_12T_ms__addf_l	0.01083	0.01090	0.00833	0.75492	0.47922	0.97772

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addf_1	0.00000	0.03760	0.04717
sky130_osu_sc_12T_ms__addf_l	0.00000	0.14793	0.26795

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.16513	1.78361	24.69610
	B->CO (RR)	0.16001	1.73839	24.13750
	CI->CO (RR)	0.15542	1.80350	25.19650
	CON->CO (FR)	0.02849	0.77399	11.55140
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.16209	1.62892	19.79550
	B->CO (RR)	0.15737	1.59786	19.59700
	CI->CO (RR)	0.15242	1.64914	20.32570
	CON->CO (FR)	0.03291	0.81391	11.04660

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.25857	2.44243	33.29180
	B->CO (FF)	0.23151	2.33790	32.02770
	CI->CO (FF)	0.22930	2.41506	33.44870
	CON->CO (RF)	0.02257	0.58599	8.75712
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.25258	2.17160	25.84260
	B->CO (FF)	0.22635	2.08261	24.96960
	CI->CO (FF)	0.22331	2.14434	26.02040
	CON->CO (RF)	0.02524	0.61061	8.43783

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CON (FR)	0.19525	1.08044	11.05870
	B->CON (FR)	0.16870	1.01868	10.71500
	CI->CON (FR)	0.16601	1.05398	11.26350
sky130_osu_sc_12T_ms__addf_l	A->CON (FR)	0.18583	1.07130	11.05380
	B->CON (FR)	0.16001	1.01013	10.71040
	CI->CON (FR)	0.15662	1.04488	11.25860

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CON (RF)	0.10022	0.62619	6.77118
	B->CON (RF)	0.09675	0.63276	7.06828
	CI->CON (RF)	0.09048	0.64881	7.35050
sky130_osu_sc_12T_ms__addf_l	A->CON (RF)	0.09704	0.62308	6.77013
	B->CON (RF)	0.09373	0.62989	7.06726
	CI->CON (RF)	0.08729	0.64573	7.34945

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->S (-R)	0.37133	2.24805	25.52370
	B->S (-R)	0.37644	2.22936	24.86370
	CI->S (-R)	0.33973	2.21474	25.67720
	CON->S (RR)	0.09279	0.73449	7.45807
sky130_osu_sc_12T_ms__addf_l	A->S (-R)	0.35777	2.23822	25.51360
	B->S (-R)	0.36303	2.21971	24.85530
	CI->S (-R)	0.32619	2.20472	25.66700
	CON->S (RR)	0.09283	0.73446	7.45712

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->S (-F)	0.28619	1.56171	16.46340
	B->S (-F)	0.27991	1.50107	16.19820
	CI->S (-F)	0.27579	1.57689	16.96680
	CON->S (FF)	0.12146	0.69221	6.08629
sky130_osu_sc_12T_ms__addf_l	A->S (-F)	0.27928	1.55701	16.45970
	B->S (-F)	0.27343	1.49574	16.19420
	CI->S (-F)	0.26891	1.57260	16.96310
	CON->S (FF)	0.12149	0.69228	6.08619

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00198	0.00210	0.00471
	B	0.00284	0.00288	0.00511
	CI	0.00284	0.00303	0.00567
sky130_osu_sc_12T_ms__addf_l	A	0.00176	0.00184	0.00379
	B	0.00262	0.00262	0.00422
	CI	0.00262	0.00277	0.00471

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00702	0.00728	0.01292
	B	0.00737	0.00761	0.01247
	CI	0.00597	0.00622	0.01209
sky130_osu_sc_12T_ms__addf_l	A	0.00685	0.00700	0.01064
	B	0.00719	0.00737	0.01036
	CI	0.00580	0.00597	0.00984

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00702	0.00714	0.00932
	B	0.00736	0.00750	0.00924
	CI	0.00648	0.00670	0.00871
sky130_osu_sc_12T_ms__addf_l	A	0.00685	0.00695	0.00907
	B	0.00718	0.00731	0.00900
	CI	0.00629	0.00650	0.00847

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00235	0.00224	0.00308
	B	0.00282	0.00278	0.00389
	CI	0.00283	0.00295	0.00426
sky130_osu_sc_12T_ms__addf_l	A	0.00213	0.00201	0.00311
	B	0.00260	0.00256	0.00378
	CI	0.00261	0.00272	0.00415

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00702	0.00728	0.01220
	B	0.00737	0.00760	0.01180
	CI	0.00597	0.00622	0.01134
sky130_osu_sc_12T_ms__addf_l	A	0.00685	0.00705	0.01187
	B	0.00719	0.00740	0.01150
	CI	0.00580	0.00602	0.01102

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01528	0.01529	0.01828
	B	0.01401	0.01376	0.01894
	CI	0.01261	0.01242	0.01541
sky130_osu_sc_12T_ms__addf_l	A	0.01527	0.01529	0.01829
	B	0.01401	0.01376	0.01894
	CI	0.01261	0.01242	0.01541

SKY130_OSU_SC_12T_MS__ADDHx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__addh_1	18.55920
sky130_osu_sc_12T_ms__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ms__addh_1	0.00534	0.00560	1.05792	1.08581	1.09616
sky130_osu_sc_12T_ms__addh_l	0.00533	0.00560	0.75105	1.08917	0.77447

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addh_1	0.00000	0.04436	0.04698
sky130_osu_sc_12T_ms__addh_l	0.00000	0.26502	0.26761

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CO (RR)	0.11244	0.73887	7.32953
	B->CO (RR)	0.11584	0.73715	7.40900
sky130_osu_sc_12T_ms__addh_l	A->CO (RR)	0.10970	0.77931	7.14449
	B->CO (RR)	0.11299	0.78032	7.22322

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CO (FF)	0.09822	0.66853	6.41293
	B->CO (FF)	0.10327	0.68456	6.47368
sky130_osu_sc_12T_ms__addh_l	A->CO (FF)	0.09688	0.69431	6.24127
	B->CO (FF)	0.10179	0.71148	6.30669

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CON (RR)	0.15747	0.76414	7.31487
	B->CON (RR)	0.16052	0.76108	7.39396
sky130_osu_sc_12T_ms__addh_l	A->CON (RR)	0.14632	0.74762	7.28447
	B->CON (RR)	0.14938	0.74658	7.36502

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CON (FF)	0.13044	0.69331	6.51691
	B->CON (FF)	0.12898	0.70349	6.56784
sky130_osu_sc_12T_ms__addh_l	A->CON (FF)	0.12119	0.67219	6.39137
	B->CON (FF)	0.11985	0.68332	6.44084

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->S (FR)	0.18287	1.45652	17.34850
	B->S (FR)	0.18151	1.46708	17.44690
	CON->S (FR)	0.03014	0.78275	11.69440
sky130_osu_sc_12T_ms__addh_l	A->S (FR)	0.17414	1.37266	14.40490
	B->S (FR)	0.17285	1.38330	14.46970
	CON->S (FR)	0.03354	0.82268	11.24800

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->S (RF)	0.20248	1.44139	16.94580
	B->S (RF)	0.20552	1.43844	17.02880
	CON->S (RF)	0.02213	0.58552	8.78469
sky130_osu_sc_12T_ms__addh_l	A->S (RF)	0.19334	1.32442	13.46650
	B->S (RF)	0.19638	1.32273	13.53920
	CON->S (RF)	0.02469	0.61766	8.58475

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00364	0.00350	0.00515
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00318	0.00471
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00323	0.00305	0.00495
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00273	0.00448

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00512	0.00498	0.00709
	B	0.00000	0.00000	0.00000
	B	0.00535	0.00542	0.00764
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00468	0.00454	0.00686
	B	0.00000	0.00000	0.00000
	B	0.00493	0.00496	0.00728

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00364	0.00350	0.00514
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00318	0.00471
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00323	0.00305	0.00484
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00273	0.00435

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00511	0.00497	0.00702
	B	0.00000	0.00000	0.00000
	B	0.00536	0.00542	0.00752
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00468	0.00453	0.00676
	B	0.00000	0.00000	0.00000
	B	0.00493	0.00496	0.00719

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00512	0.00498	0.00712
	B	0.00000	0.00000	0.00000
	B	0.00536	0.00543	0.00770
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00469	0.00455	0.00685
	B	0.00000	0.00000	0.00000
	B	0.00493	0.00497	0.00705

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00364	0.00350	0.00538
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00318	0.00467
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00322	0.00305	0.00485
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00273	0.00466

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.93120	0.88938	0.26640
sky130_osu_sc_12T_ms__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.93127	0.88945	0.26647

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.93109	0.88904	0.27196
sky130_osu_sc_12T_ms__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.93116	0.88911	0.27203

SKY130_OSU_SC_12T_MS__AND2x

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__and2_1	8.30280
sky130_osu_sc_12T_ms__and2_2	10.25640
sky130_osu_sc_12T_ms__and2_4	14.16360
sky130_osu_sc_12T_ms__and2_6	18.07080
sky130_osu_sc_12T_ms__and2_8	21.97800
sky130_osu_sc_12T_ms__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__and2_1	0.00285	0.00295	1.06824
sky130_osu_sc_12T_ms__and2_2	0.00285	0.00295	2.10926
sky130_osu_sc_12T_ms__and2_4	0.00285	0.00295	4.13196
sky130_osu_sc_12T_ms__and2_6	0.00288	0.00295	6.07032
sky130_osu_sc_12T_ms__and2_8	0.00285	0.00295	7.94232
sky130_osu_sc_12T_ms__and2_l	0.00217	0.00224	0.75966

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__and2_1	0.00000	0.01952	0.03115
sky130_osu_sc_12T_ms__and2_2	0.00000	0.03116	0.03143
sky130_osu_sc_12T_ms__and2_4	0.00000	0.05446	0.06203
sky130_osu_sc_12T_ms__and2_6	0.00000	0.07775	0.09290
sky130_osu_sc_12T_ms__and2_8	0.00000	0.10105	0.12377
sky130_osu_sc_12T_ms__and2_l	0.00000	0.29543	0.47263

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__and2_1	A->Y (RR)	0.08548	0.67559	7.14992
	B->Y (RR)	0.09090	0.68136	7.16652
sky130_osu_sc_12T_ms__and2_2	A->Y (RR)	0.09651	0.61058	7.22786
	B->Y (RR)	0.10193	0.61028	7.24648
sky130_osu_sc_12T_ms__and2_4	A->Y (RR)	0.13220	0.62065	7.61339
	B->Y (RR)	0.13749	0.61185	7.62517
sky130_osu_sc_12T_ms__and2_6	A->Y (RR)	0.16782	0.65255	7.83206
	B->Y (RR)	0.17295	0.63920	7.83795
sky130_osu_sc_12T_ms__and2_8	A->Y (RR)	0.20193	0.69295	8.06105
	B->Y (RR)	0.20717	0.67526	8.05150
sky130_osu_sc_12T_ms__and2_l	A->Y (RR)	0.08934	0.73004	7.22866
	B->Y (RR)	0.09452	0.73403	7.17889

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__and2_1	A->Y (FF)	0.07757	0.59642	5.89953
	B->Y (FF)	0.07985	0.61012	5.94915
sky130_osu_sc_12T_ms__and2_2	A->Y (FF)	0.09006	0.57513	6.07247
	B->Y (FF)	0.09180	0.58312	6.12266
sky130_osu_sc_12T_ms__and2_4	A->Y (FF)	0.12688	0.60892	6.48904
	B->Y (FF)	0.12619	0.60994	6.52912
sky130_osu_sc_12T_ms__and2_6	A->Y (FF)	0.16540	0.65316	6.75091
	B->Y (FF)	0.16219	0.64958	6.77808
sky130_osu_sc_12T_ms__and2_8	A->Y (FF)	0.20138	0.69298	6.92854
	B->Y (FF)	0.19598	0.68605	6.95964
sky130_osu_sc_12T_ms__and2_l	A->Y (FF)	0.07766	0.60351	5.53944
	B->Y (FF)	0.08360	0.62174	5.57327

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00251	0.00226	0.00932
	B	0.00000	0.00000	0.00000
	B	0.00255	0.00217	0.00649
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00469	0.00466	0.01134
	B	0.00000	0.00000	0.00000
	B	0.00474	0.00461	0.00873
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.00970	0.00999	0.01652
	B	0.00000	0.00000	0.00000
	B	0.00977	0.00998	0.01434
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.01485	0.01527	0.02174
	B	0.00000	0.00000	0.00000
	B	0.01488	0.01533	0.01986
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.02009	0.02056	0.02646
	B	0.00000	0.00000	0.00000
	B	0.02017	0.02059	0.02494
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00194	0.00185	0.01164
	B	0.00000	0.00000	0.00000
	B	0.00198	0.00176	0.00859

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00636	0.00654	0.01331
	B	0.00000	0.00000	0.00000
	B	0.00721	0.00723	0.01357
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00796	0.00846	0.01510
	B	0.00000	0.00000	0.00000
	B	0.00883	0.00914	0.01537
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01198	0.01311	0.01970
	B	0.00000	0.00000	0.00000
	B	0.01291	0.01377	0.01985
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.01630	0.01780	0.02452
	B	0.00000	0.00000	0.00000
	B	0.01707	0.01839	0.02452
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.02042	0.02231	0.02923
	B	0.00000	0.00000	0.00000
	B	0.02145	0.02282	0.02899
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00482	0.00512	0.01503
	B	0.00000	0.00000	0.00000
	B	0.00542	0.00575	0.01508

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00216	-0.00218	-0.00219
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00216	-0.00218	-0.00219
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00217	-0.00218	-0.00219
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00218	-0.00220	-0.00221
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00216	-0.00219	-0.00219
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00153	-0.00153	-0.00154

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00218	0.00221	0.00220
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00218	0.00221	0.00220
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00219	0.00221	0.00220
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00221	0.00223	0.00222
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00219	0.00221	0.00220
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00154	0.00156	0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00207	-0.00207
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00207	-0.00208	-0.00207
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00208	-0.00207
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00206	-0.00207
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00206	-0.00207	-0.00207
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00146	-0.00147	-0.00146

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00209	0.00210	0.00207
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00209	0.00210	0.00207
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00209	0.00210	0.00207
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00209	0.00209	0.00207
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00209	0.00209	0.00207
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00147	0.00148	0.00147

SKY130_OSU_SC_12T_MS__AOI21

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ms__aoi21_l	0.00260	0.00278	0.00274	0.45881

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi21_l	0.00000	0.00792	0.01544

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi21_l	A0->Y (FR)	0.10095	0.99931	10.94400
	A1->Y (FR)	0.08076	0.91651	10.35400
	B0->Y (FR)	0.07757	0.98278	11.25160

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi21_l	A0->Y (RF)	0.05097	0.55956	6.46825
	A1->Y (RF)	0.04684	0.57527	6.86039
	B0->Y (RF)	0.03035	0.52924	6.53703

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00532	0.00525	0.00561
	A1	0.00000	0.00000	0.00000
	A1	0.00449	0.00433	0.00477
	B0	0.00433	0.00429	0.00499

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00113	0.00094	0.00132
	A1	0.00000	0.00000	0.00000
	A1	0.00116	0.00097	0.00154
	B0	-0.00042	-0.00044	0.00006

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00156	-0.00177	-0.00177
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00179	-0.00180	-0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00180	-0.00181	-0.00180

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00176	0.00178	0.00177
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00179	0.00182	0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00183	0.00182	0.00180

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00156	-0.00176	-0.00177
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00180	-0.00181	-0.00180
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00198	-0.00199	-0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00176	0.00178	0.00177
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00180	0.00181	0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00199	0.00204	0.00201

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00086	-0.00088	-0.00087

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00096	0.00096	0.00089

SKY130_OSU_SC_12T_MS__AOI22

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_12T_ms__aoi22_l	0.00260	0.00278	0.00291	0.00272	0.44805

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__aoi22_l	0.00000	0.00900	0.03087

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi22_l	A0->Y (FR)	0.12933	1.02718	10.85460
	A1->Y (FR)	0.11501	1.00680	10.79770
	B0->Y (FR)	0.08186	0.97851	11.10270
	B1->Y (FR)	0.09652	0.99740	11.17280

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi22_l	A0->Y (RF)	0.06631	0.57254	6.40490
	A1->Y (RF)	0.06208	0.58891	6.79513
	B0->Y (RF)	0.03611	0.55744	6.76072
	B1->Y (RF)	0.04078	0.54175	6.37234

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.00642	0.00633	0.00664
	A1	0.00558	0.00547	0.00577
	B0	0.00463	0.00454	0.00563
	B1	0.00547	0.00543	0.00651

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.00226	0.00207	0.00243
	A1	0.00228	0.00211	0.00265
	B0	-0.00026	-0.00031	0.00029
	B1	-0.00022	-0.00030	0.00009

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00159	-0.00177	-0.00177
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00179	-0.00181	-0.00180
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00180	-0.00180	-0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00180	-0.00181	-0.00180

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00176	0.00177	0.00177
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00179	0.00182	0.00180
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00182	0.00182	0.00180
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00182	0.00182	0.00180

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00159	-0.00177	-0.00177
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00180	-0.00181	-0.00180
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00197	-0.00198	-0.00199
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00197	-0.00198	-0.00199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00176	0.00179	0.00177
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00180	0.00183	0.00181
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00199	0.00202	0.00200
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00198	0.00202	0.00200

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00086	-0.00087	-0.00086
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00086	-0.00086	-0.00086
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00207	-0.00208	-0.00209
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00207	-0.00208	-0.00209

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00100	0.00100	0.00090
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00086	0.00086	0.00086
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00208	0.00209	0.00209
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00208	0.00209	0.00209

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00087	-0.00088	-0.00088
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00087	-0.00088	-0.00087
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00190	-0.00190	-0.00190
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00190	-0.00190	-0.00190

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00101	0.00101	0.00091
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00087	0.00088	0.00087
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00193	0.00192	0.00190
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00193	0.00192	0.00190

SKY130_OSU_SC_12T_MS__BUFx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__buf_1	6.34920
sky130_osu_sc_12T_ms__buf_2	8.30280
sky130_osu_sc_12T_ms__buf_4	12.21000
sky130_osu_sc_12T_ms__buf_6	16.11720
sky130_osu_sc_12T_ms__buf_8	20.02440
sky130_osu_sc_12T_ms__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ms__buf_1	0.00296	0.99717
sky130_osu_sc_12T_ms__buf_2	0.00296	2.04577
sky130_osu_sc_12T_ms__buf_4	0.00296	4.05868
sky130_osu_sc_12T_ms__buf_6	0.00083	1.80000
sky130_osu_sc_12T_ms__buf_8	0.00296	7.96506
sky130_osu_sc_12T_ms__buf_l	0.00221	0.76287

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__buf_1	0.00000	0.01572	0.01572
sky130_osu_sc_12T_ms__buf_2	0.00000	0.02358	0.03115
sky130_osu_sc_12T_ms__buf_4	0.00000	0.03929	0.06203
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ms__buf_8	0.00000	0.07073	0.12377
sky130_osu_sc_12T_ms__buf_l	0.00000	0.23639	0.23639

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__buf_1	**A->Y (RR)**	0.06512	0.65379	7.00790
sky130_osu_sc_12T_ms__buf_2	**A->Y (RR)**	0.06911	0.56866	7.06257
sky130_osu_sc_12T_ms__buf_4	**A->Y (RR)**	0.09255	0.55687	7.38006
sky130_osu_sc_12T_ms__buf_8	**A->Y (RR)**	0.13864	0.60095	7.83548
sky130_osu_sc_12T_ms__buf_l	**A->Y (RR)**	0.06762	0.69176	7.06501

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__buf_1	**A->Y (FF)**	0.07305	0.57507	5.56781
sky130_osu_sc_12T_ms__buf_2	**A->Y (FF)**	0.08564	0.56346	5.92353
sky130_osu_sc_12T_ms__buf_4	**A->Y (FF)**	0.12230	0.60073	6.38853
sky130_osu_sc_12T_ms__buf_8	**A->Y (FF)**	0.19627	0.68679	6.93213
sky130_osu_sc_12T_ms__buf_l	**A->Y (FF)**	0.07530	0.59862	5.55845

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00242	0.00209	0.00703
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00457	0.00444	0.00949
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.00954	0.00979	0.01481
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.01957	0.02035	0.02647
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00187	0.00172	0.01024

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00618	0.00627	0.01268
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00778	0.00808	0.01432
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01187	0.01260	0.01867
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.02029	0.02184	0.02789
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00477	0.00505	0.01511

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
	-0.00054	-0.00054	-0.00052

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
	0.00054	0.00054	0.00052

SKY130_OSU_SC_12T_MS__DFFNRx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffnr_1	42.49080
sky130_osu_sc_12T_ms__dffnr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	**RN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ms__dffnr_1	0.00271	0.00271	0.00874	1.05634	1.05912
sky130_osu_sc_12T_ms__dffnr_l	0.00271	0.00271	0.00874	0.76431	0.75748

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffnr_1	0.00000	0.17017	0.36237
sky130_osu_sc_12T_ms__dffnr_l	0.00000	0.39084	0.58304

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->Q (FR)	0.43370	1.68111	16.43120
	QN->Q (FR)	0.03282	0.85024	12.56270
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FR)	0.42594	1.76913	16.02510
	QN->Q (FR)	0.03534	0.87137	11.84230

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->Q (FF)	0.27820	1.54855	17.41580
	QN->Q (RF)	0.02453	0.62743	9.31733
	RN->Q (FF)	0.25776	1.56264	17.54630
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FF)	0.28044	1.68729	17.36610
	QN->Q (RF)	0.02657	0.65268	9.01938
	RN->Q (FF)	0.26015	1.70181	17.49450

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->QN (FR)	0.23944	0.90560	8.31988
	RN->QN (FR)	0.21887	0.91929	8.44934
sky130_osu_sc_12T_ms__dffnr_l	CK->QN (FR)	0.23637	0.95679	8.21417
	RN->QN (FR)	0.21593	0.97041	8.34023

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	**CK->QN (FF)**	0.38139	0.96029	6.26238
sky130_osu_sc_12T_ms__dffnr_l	**CK->QN (FF)**	0.37177	0.97946	6.17549

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_ms__dffnr_1	hold	CK (F)	-0.10956	-0.25909	-0.86755
	setup	CK (F)	0.19768	0.27733	0.89877
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.11006	-0.25916	-0.86776
	setup	CK (F)	0.19812	0.27733	0.89877

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.09216	-0.11859	-0.47876
	setup	CK (F)	0.20852	0.24176	0.90976
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.08990	-0.11871	-0.47856
	setup	CK (F)	0.20851	0.24161	0.91486

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.10956	-0.25909	-0.86755
	setup	CK (F)	0.19768	0.27733	0.89877
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.11006	-0.25916	-0.86776
	setup	CK (F)	0.19812	0.27733	0.89877

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.09216	-0.11859	-0.47876
	setup	CK (F)	0.20852	0.24176	0.90976
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.08990	-0.11871	-0.47856
	setup	CK (F)	0.20851	0.24161	0.91486

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	recovery	CK (F)	0.16217	0.15307	-0.57102
	removal	CK (F)	-0.10780	-0.11844	0.58218
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.16263	0.15336	-0.57097
	removal	CK (F)	-0.10780	-0.11844	0.58218

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	recovery	CK (F)	0.16217	0.15307	-0.57102
	removal	CK (F)	-0.10780	-0.11844	0.58218
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.16263	0.15336	-0.57097
	removal	CK (F)	-0.10780	-0.11844	0.58218

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	min_pulse_width	RN ()	0.16142	0.43213	13.33370
	min_pulse_width	RN ()	0.16142	0.43213	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	RN ()	0.15490	0.43213	13.33370
	min_pulse_width	RN ()	0.15490	0.43213	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_ms__dffnr_1	min_pulse_width	CK ()	0.19077	0.43213	13.33370
	min_pulse_width	CK ()	0.24948	0.43213	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.19077	0.43213	13.33370
	min_pulse_width	CK ()	0.24948	0.43213	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_ms__dffnr_1	min_pulse_width	CK ()	0.18751	0.43213	13.33370
	min_pulse_width	CK ()	0.13859	0.43213	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.18099	0.43213	13.33370
	min_pulse_width	CK ()	0.13533	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01198	0.01123	0.00281
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01135	0.01084	0.00734

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01117	0.00734
	RN	-0.00083	-0.04698	-0.69306
	RN	0.01566	0.01487	0.00783
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01122	0.01078	0.01208
	RN	-0.00083	-0.03869	-0.50146
	RN	0.01500	0.01448	0.01251

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01117	0.00729
	RN	-0.00083	-0.04705	-0.69488
	RN	0.01566	0.01487	0.00777
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01122	0.01079	0.01211
	RN	-0.00083	-0.03848	-0.49698
	RN	0.01500	0.01448	0.01256

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01195	0.01121	0.00267
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01132	0.01082	0.00791

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00771	0.00729	0.01088
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00251	0.00217	0.00587
	!CK	0.00000	0.00000	0.00000
	!CK	-0.00171	-0.00198	-0.00199
sky130_osu_sc_12T_ms__dffnr_l	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00771	0.00729	0.01088
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00252	0.00217	0.00588
	!CK	0.00000	0.00000	0.00000
	!CK	-0.00171	-0.00198	-0.00199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01198	0.01173	0.01549
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00648	0.00627	0.00997
	!CK	0.00000	0.00000	0.00000
	!CK	0.00198	0.00200	0.00199
sky130_osu_sc_12T_ms__dffnr_l	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01199	0.01173	0.01549
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00648	0.00627	0.00998
	!CK	0.00000	0.00000	0.00000
	!CK	0.00198	0.00200	0.00199

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.00781	0.00728	0.01427
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00246	0.00209	0.00889
sky130_osu_sc_12T_ms__dffnr_l	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.00781	0.00728	0.01427
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00246	0.00209	0.00889

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01199	0.01166	0.01891
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00632	0.00641	0.01358
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01199	0.01167	0.01892
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00632	0.00641	0.01358

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00028	-0.00073	0.00581
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.00842	0.00729	0.01849
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00232	0.00144	0.01483
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01009	0.00927	0.01750
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00022	-0.00078	0.00585
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00028	-0.00072	0.00581
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.00842	0.00727	0.01849
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00233	0.00144	0.01483
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01009	0.00928	0.01750
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00022	-0.00078	0.00585

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00986	0.00960	0.01703
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01276	0.01247	0.02669
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01050	0.01024	0.01744
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00986	0.00961	0.01703
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01276	0.01247	0.02669
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01050	0.01023	0.01744

SKY130_OSU_SC_12T_MS__DFFRx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffr_1	42.49080
sky130_osu_sc_12T_ms__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ms__dffr_1	0.00271	0.00271	0.00856	1.06384	1.05464
sky130_osu_sc_12T_ms__dffr_l	0.00271	0.00271	0.00856	0.76122	0.75690

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffr_1	0.00000	0.17017	0.36260
sky130_osu_sc_12T_ms__dffr_l	0.00000	0.39084	0.58327

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->Q (RR)	0.34999	1.48971	15.23310
	QN->Q (FR)	0.03282	0.85244	12.61630
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RR)	0.34204	1.57025	14.67160
	QN->Q (FR)	0.03534	0.86995	11.81210

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->Q (RF)	0.35211	1.56331	16.52880
	QN->Q (RF)	0.02453	0.62885	9.35208
	RN->Q (FF)	0.25812	1.56801	17.66270
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RF)	0.35419	1.69486	16.31460
	QN->Q (RF)	0.02657	0.65179	9.00006
	RN->Q (FF)	0.26052	1.69966	17.43120

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->QN (RR)	0.31332	0.91410	7.29579
	RN->QN (FR)	0.21915	0.91892	8.42168
sky130_osu_sc_12T_ms__dffr_l	CK->QN (RR)	0.31010	0.96683	7.22501
	RN->QN (FR)	0.21619	0.97092	8.33681

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	**CK->QN (RF)**	0.29767	0.76338	4.94524
sky130_osu_sc_12T_ms__dffr_l	**CK->QN (RF)**	0.28791	0.78317	4.86907

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_ms__dffr_1	hold	CK (R)	-0.06348	-0.08547	-0.25804
	setup	CK (R)	0.26689	0.28988	1.19960
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.06369	-0.08436	-0.25954
	setup	CK (R)	0.26790	0.29151	1.21089

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.14162	-0.37419	-3.27745
	setup	CK (R)	0.17084	0.38421	3.33612
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.14321	-0.37110	-3.27605
	setup	CK (R)	0.16953	0.38421	3.33612

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.06348	-0.08547	-0.25804
	setup	CK (R)	0.26689	0.28988	1.19960
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.06369	-0.08436	-0.25954
	setup	CK (R)	0.26790	0.29151	1.21089

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.14162	-0.37419	-3.27745
	setup	CK (R)	0.17084	0.38421	3.33612
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.14321	-0.37110	-3.27605
	setup	CK (R)	0.16953	0.38421	3.33612

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	recovery	CK (R)	0.23381	0.25613	1.22811
	removal	CK (R)	-0.04271	-0.04894	-0.08180
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.23411	0.25775	1.23852
	removal	CK (R)	-0.04271	-0.04894	-0.08078

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	recovery	CK (R)	0.23381	0.25613	1.22811
	removal	CK (R)	-0.04271	-0.04894	-0.08180
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.23411	0.25775	1.23852
	removal	CK (R)	-0.04271	-0.04894	-0.08078

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	min_pulse_width	RN ()	0.16142	0.43213	13.33370
	min_pulse_width	RN ()	0.16142	0.43213	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	RN ()	0.15490	0.43213	13.33370
	min_pulse_width	RN ()	0.15490	0.43213	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_ms__dffr_1	min_pulse_width	CK ()	0.15490	0.43213	13.33370
	min_pulse_width	CK ()	0.18751	0.43213	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.14511	0.43213	13.33370
	min_pulse_width	CK ()	0.18425	0.43213	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_ms__dffr_1	min_pulse_width	CK ()	0.34733	0.43213	13.33370
	min_pulse_width	CK ()	0.14185	0.43213	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.34733	0.43213	13.33370
	min_pulse_width	CK ()	0.14185	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00634	0.00517	0.00000
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00570	0.00477	0.00446

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00715	0.00615	0.00000
	RN	-0.00083	-0.04718	-0.69798
	RN	0.01629	0.01550	0.00837
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00650	0.00576	0.00366
	RN	-0.00083	-0.03859	-0.49943
	RN	0.01564	0.01510	0.01316

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00715	0.00615	0.00000
	RN	-0.00083	-0.04693	-0.69195
	RN	0.01629	0.01550	0.00844
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00650	0.00576	0.00368
	RN	-0.00083	-0.03846	-0.49660
	RN	0.01564	0.01511	0.01318

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00631	0.00515	0.00000
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00567	0.00476	0.00406

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00150	-0.00178	-0.00179
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00786	0.00744	0.01103
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00313	0.00277	0.00648
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00150	-0.00178	-0.00179
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00786	0.00745	0.01103
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00313	0.00277	0.00648

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00178	0.00180	0.00179
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01183	0.01158	0.01535
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00587	0.00566	0.00937
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00178	0.00180	0.00179
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01183	0.01158	0.01535
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00587	0.00566	0.00938

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00245	0.00209	0.00889
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00740	0.00686	0.01386
sky130_osu_sc_12T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00246	0.00209	0.00889
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00740	0.00687	0.01387

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00632	0.00641	0.01358
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01240	0.01207	0.01932
sky130_osu_sc_12T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00632	0.00641	0.01358
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01240	0.01207	0.01932

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00043	-0.00093	0.00573
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00402	0.00310	0.00980
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00047	-0.00098	0.00571
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00043	-0.00094	0.00573
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00402	0.00311	0.00981
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00046	-0.00098	0.00571

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00969	0.00949	0.01694
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01965	0.01901	0.02678
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01470	0.01434	0.02145
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01923	0.01881	0.03245
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01041	0.01020	0.01743
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00969	0.00949	0.01694
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01965	0.01901	0.02678
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01471	0.01434	0.02146
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01923	0.01883	0.03245
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01042	0.01020	0.01744

SKY130_OSU_SC_12T_MS__DFFSRx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffsr_1	46.39800
sky130_osu_sc_12T_ms__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_ms__dffsr_1	0.00268	0.00272	0.00635	0.00862	1.09597	1.09857
sky130_osu_sc_12T_ms__dffsr_l	0.00268	0.00272	0.00636	0.00862	0.75689	0.75943

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffsr_1	0.00000	0.05789	0.07922
sky130_osu_sc_12T_ms__dffsr_l	0.00000	0.27856	0.29989

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->Q (RR)	0.37559	1.53025	15.54290
	QN->Q (FR)	0.03089	0.82281	12.28840
	RN->Q (RR)	0.30350	1.47155	15.58480
	SN->Q (FR)	0.28222	1.53744	16.98260
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RR)	0.37335	1.61230	14.70530
	QN->Q (FR)	0.03526	0.86758	11.76730
	RN->Q (RR)	0.30137	1.55463	14.74140
	SN->Q (FR)	0.27997	1.61902	16.12120

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->Q (RF)	0.40700	1.62035	16.73100
	QN->Q (RF)	0.02435	0.63436	9.49477
	RN->Q (FF)	0.27234	1.58625	17.86100
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RF)	0.41056	1.75276	16.29650
	QN->Q (RF)	0.02642	0.64988	8.96651
	RN->Q (FF)	0.27667	1.71836	17.41290

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->QN (RR)	0.36747	0.97093	7.40544
	RN->QN (FR)	0.23357	0.93654	8.53303
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RR)	0.36540	1.02999	7.32432
	RN->QN (FR)	0.23218	0.99582	8.43802

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->QN (RF)	0.32571	0.81152	5.23453
	RN->QN (RF)	0.25392	0.75310	5.27933
	SN->QN (FF)	0.23277	0.81956	6.67394
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RF)	0.32014	0.82994	4.99431
	RN->QN (RF)	0.24849	0.77239	5.03517
	SN->QN (FF)	0.22726	0.83723	6.41184

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_ms__dffsr_1	hold	CK (R)	-0.07380	-0.09900	-0.34910
	setup	CK (R)	0.28283	0.29679	1.21885
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.07381	-0.09900	-0.34942
	setup	CK (R)	0.28301	0.29693	1.22598

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.16311	-0.39398	-3.40526
	setup	CK (R)	0.20383	0.40668	3.45102
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.16605	-0.39581	-3.40633
	setup	CK (R)	0.20367	0.40668	3.45094

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.07380	-0.09900	-0.34910
	setup	CK (R)	0.28283	0.29679	1.21885
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.07381	-0.09900	-0.34942
	setup	CK (R)	0.28301	0.29693	1.22598

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.16311	-0.39398	-3.40526
	setup	CK (R)	0.20383	0.40668	3.45102
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.16605	-0.39581	-3.40633
	setup	CK (R)	0.20367	0.40668	3.45094

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.22579	0.24138	1.19509
	removal	CK (R)	-0.03295	-0.03958	-0.10276
	hold	SN (R)	-0.22331	-0.39653	-1.97079
	setup	SN (R)	0.25319	0.43410	4.89873
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.22578	0.24162	1.19886
	removal	CK (R)	-0.03295	-0.03958	-0.10276
	hold	SN (R)	-0.21404	-0.38621	-1.91891
	setup	SN (R)	0.25038	0.42487	4.78639

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.22579	0.24138	1.19509
	removal	CK (R)	-0.03295	-0.03958	-0.10276
	hold	SN (R)	-0.22331	-0.39710	-1.97079
	hold	SN (R)	-0.22483	-0.39653	-1.97424
	setup	SN (R)	0.25118	0.43270	4.68061
	setup	SN (R)	0.25319	0.43410	4.89873
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.22578	0.24162	1.19886
	removal	CK (R)	-0.03295	-0.03958	-0.10276
	hold	SN (R)	-0.21834	-0.38621	-1.91891
	hold	SN (R)	-0.21404	-0.38677	-1.92811
	setup	SN (R)	0.25038	0.42287	4.53092
	setup	SN (R)	0.23859	0.42487	4.78639

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	min_pulse_width	RN ()	0.18099	0.43213	13.33370
	min_pulse_width	RN ()	0.18751	0.43213	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	RN ()	0.18099	0.43213	13.33370
	min_pulse_width	RN ()	0.18425	0.43213	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_ms__dffsr_1	recovery	CK (R)	0.04412	0.07895	3.83880
	removal	CK (R)	-0.01619	-0.05507	-0.35942
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.04374	0.07884	3.67589
	removal	CK (R)	-0.01619	-0.05507	-0.35942

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.04412	0.07895	3.83880
	removal	CK (R)	-0.01619	-0.05507	-0.35942
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.04374	0.07884	3.67589
	removal	CK (R)	-0.01619	-0.05507	-0.35942

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	min_pulse_width	SN ()	0.22339	0.43213	13.33370
	min_pulse_width	SN ()	0.22991	0.43213	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	SN ()	0.22339	0.43213	13.33370
	min_pulse_width	SN ()	0.22013	0.43213	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_ms__dffsr_1	min_pulse_width	CK ()	0.16794	0.43213	13.33370
	min_pulse_width	CK ()	0.21034	0.43213	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.16142	0.43213	13.33370
	min_pulse_width	CK ()	0.20708	0.43213	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_ms__dffsr_1	min_pulse_width	CK ()	0.36364	0.43213	13.33370
	min_pulse_width	CK ()	0.17447	0.43213	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.36364	0.43213	13.33370
	min_pulse_width	CK ()	0.17447	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00784	0.00669	0.00024
	RN	0.01432	0.01334	0.00425
	SN	-0.00083	-0.04803	-0.71907
	SN	0.01591	0.01483	0.00509
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00725	0.00635	0.00591
	RN	0.01372	0.01300	0.00950
	SN	-0.00083	-0.03846	-0.49659
	SN	0.01531	0.01450	0.01092

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00830	0.00757	0.00302
	RN	-0.00083	-0.04803	-0.71907
	RN	0.01715	0.01651	0.01221
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00767	0.00699	0.00496
	RN	-0.00083	-0.03846	-0.49659
	RN	0.01650	0.01593	0.01410

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00830	0.00755	0.00301
	RN	-0.00083	-0.04809	-0.72077
	RN	0.01714	0.01651	0.01212
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00767	0.00698	0.00493
	RN	-0.00083	-0.03854	-0.49826
	RN	0.01650	0.01593	0.01411

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00666	-0.00023
	RN	0.01429	0.01331	0.00398
	SN	-0.00083	-0.04809	-0.72074
	SN	0.01588	0.01479	0.00499
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00722	0.00633	0.00546
	RN	0.01369	0.01297	0.00973
	SN	-0.00083	-0.03854	-0.49825
	SN	0.01528	0.01447	0.01092

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00177	-0.00180	-0.00180
	(!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)	0.00987	0.00947	0.01301
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00341	0.00306	0.00667
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00339	0.00305	0.00667
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00342	0.00308	0.00669
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00176	-0.00180	-0.00180
	(!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)	0.00987	0.00947	0.01301
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00341	0.00306	0.00667
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00339	0.00305	0.00667
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00343	0.00308	0.00669

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00182	0.00181	0.00180
	(!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)	0.01366	0.01342	0.01692
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00640	0.00622	0.00990
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00644	0.00625	0.00992
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00637	0.00620	0.00988
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00182	0.00181	0.00180
	(!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)	0.01366	0.01343	0.01692
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00640	0.00623	0.00991
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00644	0.00626	0.00992
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00637	0.00621	0.00988

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__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)	0.00201	0.00166	0.00830
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00875	0.00818	0.01474
sky130_osu_sc_12T_ms__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)	0.00201	0.00166	0.00830
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00875	0.00818	0.01474

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__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)	0.00687	0.00699	0.01425
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01313	0.01275	0.02000
sky130_osu_sc_12T_ms__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)	0.00687	0.00700	0.01425
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01313	0.01275	0.02000

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__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)	-0.00461	-0.00463	-0.00464
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00458	-0.00499	-0.00500
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00442	-0.00466	-0.00465
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00222	0.00184	0.00600
sky130_osu_sc_12T_ms__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)	-0.00460	-0.00463	-0.00464
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00458	-0.00499	-0.00500
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00441	-0.00466	-0.00464
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00223	0.00183	0.00600

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__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)	0.00463	0.00474	0.00465
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00499	0.00503	0.00500
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00464	0.00468	0.00465
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01068	0.01037	0.01373
sky130_osu_sc_12T_ms__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)	0.00463	0.00474	0.00465
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00499	0.00503	0.00501
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00465	0.00468	0.00465
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01068	0.01037	0.01374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00049	-0.00100	0.00564
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00473	0.00381	0.01061
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00466	0.00376	0.01051
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00035	-0.00084	0.00579
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00236	0.00160	0.01462
sky130_osu_sc_12T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00049	-0.00100	0.00565
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00473	0.00382	0.01059
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00466	0.00376	0.01050
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00035	-0.00084	0.00580
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00236	0.00160	0.01463

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ms__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02192	0.02132	0.02899
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00986	0.00965	0.01710
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01491	0.01463	0.02168
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01496	0.01464	0.02170
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02113	0.02064	0.03406
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01042	0.01020	0.01742
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01321	0.01289	0.02716
sky130_osu_sc_12T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02192	0.02132	0.02899
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00986	0.00965	0.01710
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01491	0.01463	0.02168
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01496	0.01464	0.02170
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02113	0.02063	0.03406
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01042	0.01019	0.01742
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01321	0.01289	0.02717

SKY130_OSU_SC_12T_MS__DFFSx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffs_1	38.58360
sky130_osu_sc_12T_ms__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ms__dffs_1	0.00269	0.00523	0.00854	1.07094	1.05793
sky130_osu_sc_12T_ms__dffs_l	0.00269	0.00523	0.00854	0.75573	0.75861

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffs_1	0.00000	0.35340	0.97702
sky130_osu_sc_12T_ms__dffs_l	0.00000	0.57407	1.19769

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->Q (RR)	0.25796	1.38502	15.19160
	QN->Q (FR)	0.03281	0.85126	12.62260
	SN->Q (FR)	0.20079	1.43959	16.21840
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RR)	0.25678	1.46787	14.44160
	QN->Q (FR)	0.03530	0.86524	11.73350
	SN->Q (FR)	0.19924	1.51659	15.44170

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->Q (RF)	0.39094	1.60984	16.64780
	QN->Q (RF)	0.02442	0.62784	9.36060
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RF)	0.38959	1.72896	16.22080
	QN->Q (RF)	0.02648	0.64857	8.94871

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->QN (RR)	0.35045	0.95872	7.34292
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RR)	0.34393	1.00668	7.26661

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->QN (RF)	0.21160	0.65874	4.84177
	SN->QN (FF)	0.15392	0.71413	5.87312
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RF)	0.20783	0.68827	4.77079
	SN->QN (FF)	0.14975	0.73793	5.77404

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_ms__dffs_1	hold	CK (R)	-0.05165	-0.07307	-0.22654
	setup	CK (R)	0.18350	0.21407	1.18774
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.05259	-0.07130	-0.22807
	setup	CK (R)	0.18458	0.21416	1.19863

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.14841	-0.37770	-3.29726
	setup	CK (R)	0.18957	0.39010	3.37332
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.14869	-0.37745	-3.29594
	setup	CK (R)	0.18957	0.39010	3.37333

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.05165	-0.07307	-0.22654
	setup	CK (R)	0.18350	0.21407	1.18774
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.05259	-0.07130	-0.22807
	setup	CK (R)	0.18458	0.21416	1.19863

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.14841	-0.37770	-3.29726
	setup	CK (R)	0.18957	0.39010	3.37332
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.14869	-0.37745	-3.29594
	setup	CK (R)	0.18957	0.39010	3.37333

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	recovery	CK (R)	0.05099	0.08088	2.77248
	removal	CK (R)	-0.02367	-0.05452	-0.44642
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.05137	0.08069	2.65108
	removal	CK (R)	-0.02367	-0.05452	-0.44642

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	recovery	CK (R)	0.05099	0.08088	2.77248
	removal	CK (R)	-0.02367	-0.05452	-0.44642
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.05137	0.08069	2.65108
	removal	CK (R)	-0.02367	-0.05452	-0.44642

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	min_pulse_width	SN ()	0.13859	0.43213	13.33370
	min_pulse_width	SN ()	0.14185	0.43213	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	SN ()	0.13533	0.43213	13.33370
	min_pulse_width	SN ()	0.13206	0.43213	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_ms__dffs_1	min_pulse_width	CK ()	0.10597	0.43213	13.33370
	min_pulse_width	CK ()	0.19730	0.43213	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.10271	0.43213	13.33370
	min_pulse_width	CK ()	0.19077	0.43213	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_ms__dffs_1	min_pulse_width	CK ()	0.26579	0.43213	13.33370
	min_pulse_width	CK ()	0.16468	0.43213	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.26579	0.43213	13.33370
	min_pulse_width	CK ()	0.16468	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00634	0.00517	0.00000
	SN	-0.00083	-0.04737	-0.70264
	SN	0.01357	0.01261	0.00948
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00570	0.00479	0.00453
	SN	-0.00083	-0.03843	-0.49583
	SN	0.01292	0.01223	0.01480

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00711	0.00615	0.00000
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00646	0.00576	0.00387

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00710	0.00615	0.00000
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00646	0.00576	0.00387

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00632	0.00516	0.00000
	SN	-0.00083	-0.04702	-0.69408
	SN	0.01354	0.01259	0.00930
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00567	0.00477	0.00411
	SN	-0.00083	-0.03851	-0.49771
	SN	0.01289	0.01221	0.01476

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00179	-0.00182	-0.00183
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00765	0.00724	0.01105
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00310	0.00276	0.00643
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00178	-0.00182	-0.00183
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00765	0.00724	0.01105
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00310	0.00276	0.00643

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00185	0.00184	0.00183
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01169	0.01142	0.01509
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00589	0.00569	0.00947
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00185	0.00185	0.00184
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01170	0.01142	0.01509
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00589	0.00569	0.00947

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00338	-0.00341	-0.00341
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00224	0.00188	0.00987
sky130_osu_sc_12T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00338	-0.00341	-0.00341
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00224	0.00188	0.00987

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00342	0.00343	0.00342
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00745	0.00733	0.01692
sky130_osu_sc_12T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00342	0.00344	0.00342
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00745	0.00733	0.01693

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00043	-0.00094	0.00573
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00040	-0.00091	0.00578
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00211	0.00136	0.01461
sky130_osu_sc_12T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00043	-0.00094	0.00573
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00040	-0.00091	0.00578
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00211	0.00136	0.01462

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01955	0.01894	0.02685
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00970	0.00950	0.01695
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01899	0.01843	0.03203
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01036	0.01014	0.01738
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01250	0.01223	0.02666
sky130_osu_sc_12T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01955	0.01894	0.02685
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00970	0.00950	0.01695
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01899	0.01846	0.03203
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01036	0.01015	0.01739
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01250	0.01224	0.02666

SKY130_OSU_SC_12T_MS__DFFx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dff_1	32.23440
sky130_osu_sc_12T_ms__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ms__dff_1	0.00284	0.00845	0.96439
sky130_osu_sc_12T_ms__dff_l	0.00284	0.00845	0.70652

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dff_1	0.00000	0.05192	0.06355
sky130_osu_sc_12T_ms__dff_l	0.00000	0.27259	0.28422

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dff_1	**CK->Q (RR)**	0.22118	0.82356	7.08980
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RR)**	0.21949	0.87361	6.98237

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dff_1	**CK->Q (RF)**	0.32837	0.76269	4.65558
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RF)**	0.32765	0.80038	4.68795

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_ms__dff_1	hold	CK (R)	-0.05006	-0.07472	-0.27184
	setup	CK (R)	0.15146	0.18615	1.18741
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.05007	-0.07472	-0.27179
	setup	CK (R)	0.15149	0.18651	1.19269

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	hold	CK (R)	-0.13426	-0.37651	-3.31202
	setup	CK (R)	0.16433	0.38925	3.38193
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.13609	-0.37724	-3.30850
	setup	CK (R)	0.16433	0.38925	3.38194

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	min_pulse_width	CK ()	0.09619	0.43213	13.33370
	min_pulse_width	CK ()	0.18099	0.43213	13.33370
sky130_osu_sc_12T_ms__dff_l	min_pulse_width	CK ()	0.09293	0.43213	13.33370
	min_pulse_width	CK ()	0.17773	0.43213	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_ms__dff_1	**min_pulse_width**	**CK ()**	0.22991	0.43213	13.33370
	min_pulse_width	**CK ()**	0.13206	0.43213	13.33370
sky130_osu_sc_12T_ms__dff_l	**min_pulse_width**	**CK ()**	0.22991	0.43213	13.33370
	min_pulse_width	**CK ()**	0.13206	0.43213	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01335	0.01225	0.02376
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01203	0.01097	0.02242

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01450	0.01370	0.02037
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01321	0.01242	0.01912

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00149	-0.00177	-0.00178
	!CK	0.00000	0.00000	0.00000
	!CK	0.00696	0.00652	0.01026
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00149	-0.00177	-0.00178
	!CK	0.00000	0.00000	0.00000
	!CK	0.00696	0.00653	0.01026

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00176	0.00179	0.00178
	!CK	0.00000	0.00000	0.00000
	!CK	0.01210	0.01176	0.01556
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00177	0.00179	0.00178
	!CK	0.00000	0.00000	0.00000
	!CK	0.01210	0.01176	0.01556

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00046	-0.00096	0.00571
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00040	-0.00091	0.00579
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00046	-0.00096	0.00571
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00040	-0.00090	0.00579

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00967	0.00948	0.01693
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01884	0.01825	0.02626
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01927	0.01873	0.03246
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01029	0.01008	0.01732
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00967	0.00949	0.01693
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01884	0.01825	0.02626
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01927	0.01874	0.03247
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01029	0.01008	0.01733

SKY130_OSU_SC_12T_MS__INVx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__inv_1	4.39560
sky130_osu_sc_12T_ms__inv_10	21.97800
sky130_osu_sc_12T_ms__inv_2	6.34920
sky130_osu_sc_12T_ms__inv_3	8.30280
sky130_osu_sc_12T_ms__inv_4	10.25640
sky130_osu_sc_12T_ms__inv_6	14.16360
sky130_osu_sc_12T_ms__inv_8	18.07080
sky130_osu_sc_12T_ms__inv_l	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ms__inv_1	0.00275	0.97152
sky130_osu_sc_12T_ms__inv_10	0.02452	9.70910
sky130_osu_sc_12T_ms__inv_2	0.00510	2.00297
sky130_osu_sc_12T_ms__inv_3	0.00754	2.94077
sky130_osu_sc_12T_ms__inv_4	0.00993	3.96463
sky130_osu_sc_12T_ms__inv_6	0.01486	5.90563
sky130_osu_sc_12T_ms__inv_8	0.01969	7.79801
sky130_osu_sc_12T_ms__inv_l	0.00217	0.69112

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__inv_1	0.00000	0.00786	0.01544
sky130_osu_sc_12T_ms__inv_10	0.00000	0.07859	0.15436
sky130_osu_sc_12T_ms__inv_2	0.00000	0.01572	0.03087
sky130_osu_sc_12T_ms__inv_3	0.00000	0.02358	0.04631
sky130_osu_sc_12T_ms__inv_4	0.00000	0.03143	0.06174
sky130_osu_sc_12T_ms__inv_6	0.00000	0.04715	0.09262
sky130_osu_sc_12T_ms__inv_8	0.00000	0.06287	0.12349
sky130_osu_sc_12T_ms__inv_l	0.00000	0.11819	0.23625

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__inv_1	**A->Y (FR)**	0.03169	0.78466	11.38970
sky130_osu_sc_12T_ms__inv_10	**A->Y (FR)**	0.03463	0.51271	11.35440
sky130_osu_sc_12T_ms__inv_2	**A->Y (FR)**	0.02309	0.66294	11.32780
sky130_osu_sc_12T_ms__inv_3	**A->Y (FR)**	0.02456	0.61672	11.35230
sky130_osu_sc_12T_ms__inv_4	**A->Y (FR)**	0.02402	0.58255	11.31890
sky130_osu_sc_12T_ms__inv_6	**A->Y (FR)**	0.02638	0.54581	11.31790
sky130_osu_sc_12T_ms__inv_8	**A->Y (FR)**	0.03017	0.52538	11.29220
sky130_osu_sc_12T_ms__inv_l	**A->Y (FR)**	0.03549	0.81379	10.82130

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__inv_1	**A->Y (RF)**	0.02252	0.56267	8.21710
sky130_osu_sc_12T_ms__inv_10	**A->Y (RF)**	0.02788	0.37739	8.46717
sky130_osu_sc_12T_ms__inv_2	**A->Y (RF)**	0.01769	0.49482	8.35753
sky130_osu_sc_12T_ms__inv_3	**A->Y (RF)**	0.01892	0.46333	8.45305
sky130_osu_sc_12T_ms__inv_4	**A->Y (RF)**	0.01848	0.43887	8.46241
sky130_osu_sc_12T_ms__inv_6	**A->Y (RF)**	0.02146	0.40832	8.48638
sky130_osu_sc_12T_ms__inv_8	**A->Y (RF)**	0.02456	0.38905	8.47295
sky130_osu_sc_12T_ms__inv_l	**A->Y (RF)**	0.02537	0.59124	8.05703

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	0.00315	0.00323	0.00404
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.02553	0.02726	0.03575
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00538	0.00558	0.00724
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.00828	0.00852	0.01098
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01052	0.01101	0.01419
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.01557	0.01682	0.02157
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.02057	0.02184	0.02827
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00247	0.00259	0.00435

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	-0.00051	-0.00051	-0.00011
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	-0.00940	-0.00881	-0.00345
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00173	-0.00165	-0.00078
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00226	-0.00217	-0.00080
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00356	-0.00342	-0.00148
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	-0.00543	-0.00481	-0.00217
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	-0.00740	-0.00687	-0.00283
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00037	-0.00036	-0.00001

SKY130_OSU_SC_12T_MS__MUX2

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ms__mux2_1	0.17012	0.17005	0.00567	0.16820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__mux2_1	0.00000	0.01596	0.01619

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__mux2_1	A0->Y (RR)	-	0.01478	0.29153	3.02918
	A1->Y (RR)	-	0.01752	0.29443	3.03297
	S0->Y (RR)	(!A0 * A1)	0.05116	0.30538	1.21796
	S0->Y (FR)	(A0 * !A1)	0.03388	0.40825	3.28253

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__mux2_1	A0->Y (FF)	-	0.01667	0.27526	2.77280
	A1->Y (FF)	-	0.01465	0.27252	2.77501
	S0->Y (FF)	(!A0 * A1)	0.07017	0.37488	2.09293
	S0->Y (RF)	(A0 * !A1)	0.02462	0.30907	2.31866

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00308	-0.00309	-0.00308
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00200	-0.00201	-0.00201
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00418	0.00426	0.01224
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00195	-0.00223	0.00510

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00308	0.00309	0.00308
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00200	0.00201	0.00201
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00056	0.00022	0.00786
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00845	0.00845	0.01613

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00075	-0.00075	-0.00075

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00075	0.00075	0.00075

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00089	-0.00089	-0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00089	0.00089	0.00089

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00071	-0.00100	0.00649
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00069	-0.00096	0.00650

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00655	0.00649	0.01430
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00607	0.00608	0.01407

SKY130_OSU_SC_12T_MS__NAND2x

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__nand2_1	6.34920
sky130_osu_sc_12T_ms__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nand2_1	0.00274	0.00273	0.96489
sky130_osu_sc_12T_ms__nand2_l	0.00212	0.00215	0.68948

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nand2_1	0.00000	0.00787	0.03087
sky130_osu_sc_12T_ms__nand2_l	0.00000	0.11821	0.47250

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nand2_1	A->Y (FR)	0.03305	0.78661	11.38200
	B->Y (FR)	0.03761	0.75966	10.91210
sky130_osu_sc_12T_ms__nand2_l	A->Y (FR)	0.03578	0.81443	10.82530
	B->Y (FR)	0.04277	0.82020	10.81090

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nand2_1	A->Y (RF)	0.03401	0.71983	10.37810
	B->Y (RF)	0.03865	0.71019	10.03220
sky130_osu_sc_12T_ms__nand2_l	A->Y (RF)	0.03775	0.77176	10.17990
	B->Y (RF)	0.04214	0.75911	9.78443

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00333	0.00340	0.00414
	B	0.00000	0.00000	0.00000
	B	0.00422	0.00425	0.00429
sky130_osu_sc_12T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00250	0.00262	0.00415
	B	0.00000	0.00000	0.00000
	B	0.00313	0.00321	0.00477

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00032	-0.00034	0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00030	-0.00039	-0.00011
sky130_osu_sc_12T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00020	-0.00021	0.00011
	B	0.00000	0.00000	0.00000
	B	-0.00019	-0.00024	-0.00001

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00208	-0.00209	-0.00210
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00148	-0.00148	-0.00149

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00210	0.00213	0.00211
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00149	0.00151	0.00149

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00193	-0.00194	-0.00194
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00139	-0.00138	-0.00139

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00196	0.00196	0.00194
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00140	0.00140	0.00139

SKY130_OSU_SC_12T_MS__NOR2x

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__nor2_1	6.34920
sky130_osu_sc_12T_ms__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nor2_1	0.00270	0.00297	0.51367
sky130_osu_sc_12T_ms__nor2_l	0.00204	0.00225	0.38195

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nor2_1	0.00000	0.00615	0.01544
sky130_osu_sc_12T_ms__nor2_l	0.00000	0.07917	0.23625

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nor2_1	A->Y (FR)	0.07178	0.94651	11.08160
	B->Y (FR)	0.05767	0.93081	11.19430
sky130_osu_sc_12T_ms__nor2_l	A->Y (FR)	0.07478	1.00417	10.82160
	B->Y (FR)	0.06367	0.97312	10.73560

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nor2_1	A->Y (RF)	0.02949	0.47704	5.95052
	B->Y (RF)	0.02394	0.46829	5.93518
sky130_osu_sc_12T_ms__nor2_l	A->Y (RF)	0.03121	0.50282	5.93158
	B->Y (RF)	0.02650	0.49684	5.91802

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00435	0.00426	0.00468
	B	0.00000	0.00000	0.00000
	B	0.00346	0.00341	0.00459
sky130_osu_sc_12T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00315	0.00309	0.00388
	B	0.00000	0.00000	0.00000
	B	0.00259	0.00255	0.00503

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00049	0.00034	0.00094
	B	0.00000	0.00000	0.00000
	B	-0.00039	-0.00038	0.00018
sky130_osu_sc_12T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00036	0.00030	0.00082
	B	0.00000	0.00000	0.00000
	B	-0.00024	-0.00023	0.00028

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00149	-0.00179	-0.00180
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00097	-0.00121	-0.00123

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00179	0.00179	0.00180
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00122	0.00124	0.00123

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00087	-0.00088	-0.00087
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00061	-0.00061	-0.00061

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00092	0.00092	0.00088
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00064	0.00065	0.00062

SKY130_OSU_SC_12T_MS__OAI21

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ms__oai21_l	0.00273	0.00283	0.00242	0.50933

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai21_l	0.00000	0.09177	0.25169

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai21_l	A0->Y (FR)	0.08138	0.95512	11.19000
	A1->Y (FR)	0.09891	0.97536	11.07390
	B0->Y (FR)	0.04516	0.73085	9.11735

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai21_l	A0->Y (RF)	0.04672	0.58354	6.95417
	A1->Y (RF)	0.05532	0.58180	6.85688
	B0->Y (RF)	0.03663	0.60217	7.53136

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00476	0.00474	0.00573
	A1	0.00000	0.00000	0.00000
	A1	0.00570	0.00559	0.00597
	B0	0.00383	0.00372	0.00627

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00024	0.00016	0.00051
	A1	0.00000	0.00000	0.00000
	A1	0.00114	0.00096	0.00130
	B0	0.00050	0.00047	0.00098

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00087	-0.00088	-0.00087
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00179	-0.00182	-0.00182
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00185	-0.00186	-0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00093	0.00093	0.00089
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00181	0.00182	0.00182
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00186	0.00188	0.00186

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00144	-0.00173	-0.00174
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00178	-0.00181	-0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00183	-0.00183	-0.00183

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00172	0.00174	0.00174
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00179	0.00181	0.00181
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00183	0.00183	0.00184

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00155	-0.00156	-0.00159

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00159	0.00162	0.00160

SKY130_OSU_SC_12T_MS__OAI22

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__oai22_1	0.00257	0.00269	0.00288	0.00284	0.53136

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai22_1	0.00000	0.00922	0.03087

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai22_l	A0->Y (FR)	0.10505	0.97081	11.07950
	A1->Y (FR)	0.08372	0.94821	11.20320
	B0->Y (FR)	0.06103	0.92171	11.18430
	B1->Y (FR)	0.07645	0.94069	11.05700

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai22_l	A0->Y (RF)	0.07420	0.62764	7.18095
	A1->Y (RF)	0.06080	0.60983	7.13811
	B0->Y (RF)	0.05140	0.63004	7.71938
	B1->Y (RF)	0.06550	0.64578	7.78080

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.00725	0.00714	0.00751
	A1	0.00630	0.00623	0.00720
	B0	0.00458	0.00444	0.00555
	B1	0.00559	0.00548	0.00585

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.00172	0.00155	0.00186
	A1	0.00090	0.00082	0.00111
	B0	0.00087	0.00083	0.00130
	B1	0.00173	0.00157	0.00205

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00147	-0.00175	-0.00176
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00147	-0.00175	-0.00176
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00172	-0.00176	-0.00175
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00177	-0.00177	-0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00175	0.00177	0.00176
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00174	0.00177	0.00176
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00174	0.00176	0.00175
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00178	0.00179	0.00178

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00085	-0.00086	-0.00085
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00085	-0.00086	-0.00085
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00171	-0.00174	-0.00174
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00177	-0.00178	-0.00177

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00089	0.00090	0.00086
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00090	0.00090	0.00086
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00173	0.00174	0.00174
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00178	0.00179	0.00178

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00085	-0.00087	-0.00086
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00086	-0.00087	-0.00086
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00203	-0.00206	-0.00205
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00203	-0.00204	-0.00208

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00090	0.00091	0.00087
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00090	0.00092	0.00087
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00206	0.00207	0.00205
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00209	0.00213	0.00209

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00145	-0.00175	-0.00174
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00145	-0.00173	-0.00174
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00206	-0.00212	-0.00210
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00207	-0.00207	-0.00212

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00174	0.00175	0.00174
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00174	0.00176	0.00174
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00210	0.00212	0.00210
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00213	0.00215	0.00213

SKY130_OSU_SC_12T_MS__OR2x

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__or2_1	8.30280
sky130_osu_sc_12T_ms__or2_2	10.25640
sky130_osu_sc_12T_ms__or2_4	14.16360
sky130_osu_sc_12T_ms__or2_8	21.97800
sky130_osu_sc_12T_ms__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__or2_1	0.00305	0.00282	0.99652
sky130_osu_sc_12T_ms__or2_2	0.00306	0.00282	2.04384
sky130_osu_sc_12T_ms__or2_4	0.00306	0.00282	4.04739
sky130_osu_sc_12T_ms__or2_8	0.00305	0.00282	7.89667
sky130_osu_sc_12T_ms__or2_l	0.00230	0.00215	0.70997

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__or2_1	0.00000	0.01022	0.01600
sky130_osu_sc_12T_ms__or2_2	0.00000	0.01429	0.03143
sky130_osu_sc_12T_ms__or2_4	0.00000	0.02242	0.06231
sky130_osu_sc_12T_ms__or2_8	0.00000	0.03870	0.12405
sky130_osu_sc_12T_ms__or2_l	0.00000	0.13833	0.23652

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__or2_1	A->Y (RR)	0.07523	0.68720	7.08825
	B->Y (RR)	0.06653	0.65882	6.98509
sky130_osu_sc_12T_ms__or2_2	A->Y (RR)	0.08003	0.59911	7.14820
	B->Y (RR)	0.07095	0.57480	7.06105
sky130_osu_sc_12T_ms__or2_4	A->Y (RR)	0.10356	0.58183	7.46878
	B->Y (RR)	0.09432	0.56217	7.38148
sky130_osu_sc_12T_ms__or2_8	A->Y (RR)	0.14960	0.61734	7.90153
	B->Y (RR)	0.14021	0.60185	7.83438
sky130_osu_sc_12T_ms__or2_l	A->Y (RR)	0.07846	0.73460	6.91785
	B->Y (RR)	0.07042	0.70852	6.89901

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__or2_1	A->Y (FF)	0.13794	0.67001	5.93068
	B->Y (FF)	0.11652	0.63945	5.79572
sky130_osu_sc_12T_ms__or2_2	A->Y (FF)	0.16539	0.66869	6.31123
	B->Y (FF)	0.14440	0.64910	6.17110
sky130_osu_sc_12T_ms__or2_4	A->Y (FF)	0.23445	0.73084	6.82034
	B->Y (FF)	0.21352	0.71822	6.68369
sky130_osu_sc_12T_ms__or2_8	A->Y (FF)	0.37341	0.88412	7.39521
	B->Y (FF)	0.35247	0.86614	7.31325
sky130_osu_sc_12T_ms__or2_l	A->Y (FF)	0.14271	0.68894	5.63519
	B->Y (FF)	0.12373	0.65623	5.50480

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00342	0.00301	0.00705
	B	0.00000	0.00000	0.00000
	B	0.00255	0.00244	0.00730
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.00561	0.00541	0.00951
	B	0.00000	0.00000	0.00000
	B	0.00471	0.00477	0.00972
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01063	0.01080	0.01489
	B	0.00000	0.00000	0.00000
	B	0.00968	0.01023	0.01517
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.02067	0.02145	0.02669
	B	0.00000	0.00000	0.00000
	B	0.01973	0.02099	0.02716
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00260	0.00237	0.00666
	B	0.00000	0.00000	0.00000
	B	0.00200	0.00193	0.00863

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00741	0.00713	0.01051
	B	0.00000	0.00000	0.00000
	B	0.00623	0.00642	0.01287
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.00903	0.00909	0.01225
	B	0.00000	0.00000	0.00000
	B	0.00783	0.00829	0.01436
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01320	0.01363	0.01668
	B	0.00000	0.00000	0.00000
	B	0.01199	0.01273	0.01856
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.02276	0.02263	0.02583
	B	0.00000	0.00000	0.00000
	B	0.02148	0.02195	0.02756
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00551	0.00535	0.00983
	B	0.00000	0.00000	0.00000
	B	0.00470	0.00501	0.01415

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00152	-0.00181	-0.00181
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00152	-0.00181	-0.00181
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00152	-0.00181	-0.00181
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00151	-0.00181	-0.00181
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00097	-0.00122	-0.00123

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00180	0.00181	0.00181
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00180	0.00181	0.00181
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00180	0.00181	0.00181
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00180	0.00181	0.00181
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00123	0.00125	0.00124

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00087	-0.00088	-0.00087
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00087	-0.00088	-0.00087
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00087	-0.00088	-0.00087
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00087	-0.00088	-0.00087
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00059	-0.00060	-0.00060

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00093	0.00093	0.00089
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00093	0.00093	0.00089
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00093	0.00093	0.00089
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00092	0.00094	0.00089
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00063	0.00064	0.00061

SKY130_OSU_SC_12T_MS__TBUFIx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__tbufi_1	8.30280
sky130_osu_sc_12T_ms__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tbufi_1	0.00294	0.00387	0.53357
sky130_osu_sc_12T_ms__tbufi_l	0.00226	0.00296	0.37141

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tbufi_1	0.00000	0.00806	0.03087
sky130_osu_sc_12T_ms__tbufi_l	0.00000	0.11830	0.47250

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tbufi_1	A->Y (FR)	0.05304	0.91961	11.19870
	OE->Y (FR)	0.04928	0.30518	4.73314
	OE->Y (RR)	0.08831	0.79655	7.05966
sky130_osu_sc_12T_ms__tbufi_l	A->Y (FR)	0.06110	0.96305	10.54520
	OE->Y (FR)	0.04927	0.30501	4.73311
	OE->Y (RR)	0.09411	0.86591	7.00154

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tbufi_1	A->Y (RF)	0.03328	0.58710	7.42256
	OE->Y (FF)	0.05048	0.30520	4.73311
	OE->Y (RF)	0.03170	0.56544	7.01404
sky130_osu_sc_12T_ms__tbufi_l	A->Y (RF)	0.03741	0.61466	7.17372
	OE->Y (FF)	0.05007	0.30501	4.73310
	OE->Y (RF)	0.03504	0.59166	6.72357

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00321	0.00321	0.00390
	OE	0.00000	0.00000	0.00000
	OE	0.00310	0.00284	0.00967
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00243	0.00250	0.00461
	OE	0.00000	0.00000	0.00000
	OE	0.00227	0.00214	0.01195

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00040	0.00011
	OE	0.00000	0.00000	0.00000
	OE	0.00194	0.00166	0.00948
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00023	0.00023
	OE	0.00000	0.00000	0.00000
	OE	0.00138	0.00125	0.01211

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00150	-0.00152	-0.00151
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00135	-0.00137	-0.00135
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00109	-0.00109	-0.00109
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00097	-0.00099	-0.00097

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00150	0.00152	0.00151
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00138	0.00139	0.00136
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00109	0.00109	0.00109
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00100	0.00100	0.00098

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00114	0.00087	0.00876
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00100	0.00074	0.00861
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00082	0.00070	0.01166
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00068	0.00058	0.01150

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00386	0.00377	0.01179
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00392	0.00387	0.01186
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00295	0.00315	0.01437
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00296	0.00319	0.01442

SKY130_OSU_SC_12T_MS__TNBUFIx

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__tnbufi_1	8.30280
sky130_osu_sc_12T_ms__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tnbufi_1	0.00294	0.00434	0.53358
sky130_osu_sc_12T_ms__tnbufi_l	0.00216	0.00329	0.38044

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tnbufi_1	0.00000	0.01311	0.01572
sky130_osu_sc_12T_ms__tnbufi_l	0.00000	0.19701	0.23640

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tnbufi_1	A->Y (FR)	0.05354	0.91949	11.19870
	OE->Y (RR)	0.02830	0.30521	4.73338
	OE->Y (FR)	0.06380	0.93024	11.07360
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (FR)	0.06001	0.96843	10.70420
	OE->Y (RR)	0.03091	0.30495	4.73320
	OE->Y (FR)	0.06855	0.99745	10.78550

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tnbufi_1	A->Y (RF)	0.03255	0.58669	7.42237
	OE->Y (RF)	0.02819	0.30519	4.73338
	OE->Y (FF)	0.06273	0.54727	4.78262
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (RF)	0.03563	0.62027	7.26716
	OE->Y (RF)	0.03077	0.30497	4.73317
	OE->Y (FF)	0.06793	0.56550	4.49165

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00334	0.00333	0.00402
	OE	0.00000	0.00000	0.00000
	OE	0.00789	0.00801	0.01648
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00249	0.00244	0.00465
	OE	0.00000	0.00000	0.00000
	OE	0.00598	0.00634	0.01790

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00056	-0.00054	-0.00004
	OE	0.00000	0.00000	0.00000
	OE	0.00686	0.00709	0.01471
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00040	-0.00038	0.00007
	OE	0.00000	0.00000	0.00000
	OE	0.00522	0.00574	0.01645

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00123	-0.00124	-0.00124
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00109	-0.00111	-0.00109
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00085	-0.00086	-0.00085
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00074	-0.00076	-0.00074

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00123	0.00124	0.00124
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00112	0.00113	0.00110
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00085	0.00086	0.00085
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00077	0.00077	0.00076

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00195	-0.00248	0.00565
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00195	-0.00239	0.00566
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00129	-0.00162	0.00945
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00135	-0.00161	0.00946

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00593	0.00612	0.01451
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00584	0.00610	0.01442
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00456	0.00506	0.01640
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00449	0.00491	0.01635

SKY130_OSU_SC_12T_MS__XNOR2

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xnor2_l	0.00589	0.00501	0.55576

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xnor2_l	0.00000	0.02762	0.04659

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xnor2_l	A->Y (RR)	B	0.11308	0.84298	7.33665
	A->Y (FR)	!B	0.07142	0.94494	11.37210
	B->Y (RR)	A	0.09291	0.82203	7.32716
	B->Y (FR)	!A	0.08756	0.95583	11.25940

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xnor2_l	A->Y (FF)	B	0.10368	0.63561	5.16181
	A->Y (RF)	!B	0.04555	0.58471	7.19178
	B->Y (FF)	A	0.09133	0.62328	5.15172
	B->Y (RF)	!A	0.05479	0.59663	7.20209

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00330	0.00292	0.00976
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00817	0.00809	0.01627
	B	A	0.00000	0.00000	0.00000
	B	A	0.00153	0.00137	0.00901
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00857	0.00837	0.01697

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00958	0.00930	0.01706
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00215	0.00177	0.00969
	B	A	0.00000	0.00000	0.00000
	B	A	0.00863	0.00879	0.01677
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00285	0.00243	0.01034

SKY130_OSU_SC_12T_MS__XOR2

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xor2_l	0.00592	0.00505	0.51467

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xor2_l	0.00000	0.02762	0.04650

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xor2_l	A->Y (RR)	!B	0.11911	0.84581	7.19859
	A->Y (FR)	B	0.08980	0.96259	11.12400
	B->Y (RR)	!A	0.09819	0.83387	7.19595
	B->Y (FR)	A	0.09830	0.97286	11.12830

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xor2_l	A->Y (FF)	!B	0.10053	0.62049	4.87575
	A->Y (RF)	B	0.04681	0.59964	7.29912
	B->Y (FF)	!A	0.09475	0.61549	4.89409
	B->Y (RF)	A	0.05310	0.58234	6.89742

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00941	0.00929	0.01764
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00209	0.00133	0.00867
	B	A	0.00000	0.00000	0.00000
	B	A	0.00953	0.00948	0.01778
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00146	0.00124	0.00883

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00185	0.00133	0.00928
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00995	0.00996	0.01723
	B	A	0.00000	0.00000	0.00000
	B	A	0.00189	0.00140	0.00920
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00874	0.00894	0.01682

SKY130_OSU_SC_12T_MS_x

sky130_osu_sc_12T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__ant	4.39560
sky130_osu_sc_12T_ms__tiehi	4.39560
sky130_osu_sc_12T_ms__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ms__ant	0.28791
sky130_osu_sc_12T_ms__tiehi	0.00000
sky130_osu_sc_12T_ms__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__ant	0.00000	117249.00000	234498.00000
sky130_osu_sc_12T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ms__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_ms__ant	0.00000	0.00000	0.00000
	-0.00138	0.02450	0.38477

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__ant	0.00000	0.00000	0.00000
	2.04136	1.94415	0.47541