sky130_osu_sc_18T_ms_tt_1P80_25C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_MS__ADDFx
SKY130_OSU_SC_18T_MS__ADDHx
SKY130_OSU_SC_18T_MS__AND2x
SKY130_OSU_SC_18T_MS__AOI21
SKY130_OSU_SC_18T_MS__AOI22
SKY130_OSU_SC_18T_MS__BUFx
SKY130_OSU_SC_18T_MS__DFFRx
SKY130_OSU_SC_18T_MS__DFFSRx
SKY130_OSU_SC_18T_MS__DFFSx
SKY130_OSU_SC_18T_MS__DFFx
SKY130_OSU_SC_18T_MS__INVx
SKY130_OSU_SC_18T_MS__MUX2
SKY130_OSU_SC_18T_MS__NAND2x
SKY130_OSU_SC_18T_MS__NOR2x
SKY130_OSU_SC_18T_MS__OAI21
SKY130_OSU_SC_18T_MS__OAI22
SKY130_OSU_SC_18T_MS__OR2x
SKY130_OSU_SC_18T_MS__TBUFIx
SKY130_OSU_SC_18T_MS__TNBUFIx
SKY130_OSU_SC_18T_MS__XNOR2
SKY130_OSU_SC_18T_MS__XOR2
SKY130_OSU_SC_18T_MS_x

SKY130_OSU_SC_18T_MS__ADDFx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__addf_1	46.88640
sky130_osu_sc_18T_ms__addf_l	46.88640

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	**B**	**CI**	**CO**	**CON**	**S**
sky130_osu_sc_18T_ms__addf_1	0.02118	0.02115	0.01616	3.04228	1.42879	2.94541
sky130_osu_sc_18T_ms__addf_l	0.02117	0.02113	0.01616	2.07380	1.42855	2.09372

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	0.59559	0.80854
sky130_osu_sc_18T_ms__addf_l	0.00000	0.49705	0.71000

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.14025	1.71980	27.10630
	B->CO (RR)	0.12006	1.62984	25.79830
	CI->CO (RR)	0.13344	1.75426	27.67740
	CON->CO (FR)	0.02569	0.70485	10.87810
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.14184	1.60076	21.91590
	B->CO (RR)	0.12195	1.52393	21.00640
	CI->CO (RR)	0.13501	1.63580	22.51680
	CON->CO (FR)	0.02909	0.77124	10.92180

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.17839	2.07006	32.48060
	B->CO (FF)	0.15784	1.97149	31.14840
	CI->CO (FF)	0.15533	2.05433	32.60550
	CON->CO (RF)	0.02423	0.65451	10.18040
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.17529	1.85878	25.27640
	B->CO (FF)	0.15499	1.77569	24.37710
	CI->CO (FF)	0.15215	1.84447	25.43400
	CON->CO (RF)	0.02605	0.67833	9.63966

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CON (FR)	0.13042	0.89712	10.34410
	B->CON (FR)	0.11135	0.84583	10.04650
	CI->CON (FR)	0.10732	0.88436	10.54640
sky130_osu_sc_18T_ms__addf_1	A->CON (FR)	0.12397	0.89052	10.33640
	B->CON (FR)	0.10532	0.83966	10.04000
	CI->CON (FR)	0.10080	0.87788	10.53890

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CON (RF)	0.09289	0.67524	7.86332
	B->CON (RF)	0.08787	0.66761	7.87544
	CI->CON (RF)	0.08609	0.71161	8.50859
sky130_osu_sc_18T_ms__addf_1	A->CON (RF)	0.08933	0.67158	7.85875
	B->CON (RF)	0.08468	0.66446	7.87145
	CI->CON (RF)	0.08250	0.70671	8.50390

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->S (-R)	0.25930	1.82422	24.81090
	B->S (-R)	0.27150	1.81676	23.86420
	CI->S (-R)	0.23442	1.80467	24.93230
	CON->S (RR)	0.07831	0.61085	7.32050
sky130_osu_sc_18T_ms__addf_1	A->S (-R)	0.24904	1.69992	20.73900
	B->S (-R)	0.26157	1.70273	20.13250
	CI->S (-R)	0.22401	1.68199	20.89190
	CON->S (RR)	0.07855	0.66033	7.35843

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->S (-F)	0.22808	1.58223	20.73080
	B->S (-F)	0.22278	1.51329	19.85710
	CI->S (-F)	0.22040	1.61255	21.30900
	CON->S (FF)	0.09280	0.66880	7.46930
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.21744	1.46009	17.17840
	B->S (-F)	0.21199	1.40331	16.60420
	CI->S (-F)	0.20969	1.49156	17.77550
	CON->S (FF)	0.09032	0.68893	7.20934

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00415	0.00541	0.03304
	B	0.00479	0.00588	0.02984
	CI	0.00674	0.00813	0.03617
sky130_osu_sc_18T_ms__addf_l	A	0.00309	0.00387	0.02121
	B	0.00558	0.00581	0.01941
	CI	0.00568	0.00659	0.02393

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01760	0.01883	0.05569
	B	0.01864	0.01969	0.05183
	CI	0.01473	0.01614	0.05415
sky130_osu_sc_18T_ms__addf_l	A	0.01655	0.01743	0.04194
	B	0.01758	0.01832	0.03914
	CI	0.01368	0.01473	0.04077

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01758	0.01821	0.03519
	B	0.01809	0.01851	0.03435
	CI	0.01631	0.01737	0.03358
sky130_osu_sc_18T_ms__addf_l	A	0.01655	0.01714	0.03395
	B	0.01706	0.01741	0.03312
	CI	0.01366	0.01443	0.03333

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00413	0.00485	0.01815
	B	0.00476	0.00538	0.01724
	CI	0.00671	0.00758	0.02118
sky130_osu_sc_18T_ms__addf_l	A	0.00306	0.00366	0.01595
	B	0.00372	0.00419	0.01516
	CI	0.00565	0.00637	0.01893

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01760	0.01879	0.05413
	B	0.01863	0.01967	0.05042
	CI	0.01472	0.01611	0.05296
sky130_osu_sc_18T_ms__addf_l	A	0.01655	0.01743	0.04212
	B	0.01757	0.01834	0.03947
	CI	0.01367	0.01473	0.04106

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.03973	0.04015	0.06501
	B	0.03525	0.03664	0.07712
	CI	0.03224	0.03239	0.05746
sky130_osu_sc_18T_ms__addf_l	A	0.03836	0.03859	0.06409
	B	0.03390	0.03525	0.07695
	CI	0.03091	0.03100	0.05694

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__addh_1	27.83880
sky130_osu_sc_18T_ms__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_ms__addh_1	0.01037	0.01135	3.00734	1.54772	3.04151
sky130_osu_sc_18T_ms__addh_l	0.01037	0.01135	1.77886	1.55019	1.81815

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	0.69716	0.80795
sky130_osu_sc_18T_ms__addh_l	0.00000	0.47275	0.62826

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CO (RR)	0.09272	0.62428	7.17207
	B->CO (RR)	0.09665	0.62091	7.25773
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.09298	0.69040	7.06979
	B->CO (RR)	0.09698	0.68864	7.11552

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CO (FF)	0.07918	0.63458	7.44699
	B->CO (FF)	0.08508	0.64921	7.45817
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.07916	0.67127	6.94891
	B->CO (FF)	0.08489	0.68598	6.95818

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CON (RR)	B	0.12648	0.52086	3.89344
	A->CON (FR)	!B	0.07045	0.82553	10.48020
	B->CON (RR)	A	0.13024	0.51669	3.98267
	B->CON (FR)	!A	0.08892	0.84671	10.43430
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.11359	0.49673	3.87694
	A->CON (FR)	!B	0.06271	0.81736	10.48230
	B->CON (RR)	A	0.11740	0.49488	3.93569
	B->CON (FR)	!A	0.08116	0.83875	10.43630

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CON (FF)	B	0.12395	0.67670	6.13700
	A->CON (RF)	!B	0.05438	0.67933	8.63097
	B->CON (FF)	A	0.12225	0.71620	6.57796
	B->CON (RF)	!A	0.06456	0.66112	8.21959
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.11252	0.64368	5.94972
	A->CON (RF)	!B	0.05012	0.67484	8.63393
	B->CON (FF)	A	0.11077	0.68331	6.38719
	B->CON (RF)	!A	0.06043	0.65702	8.22328

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->S (RR)	!B	0.09776	1.66526	26.94090
	A->S (FR)	B	0.16768	1.64937	24.15760
	B->S (RR)	!A	0.10798	1.60642	25.57660
	B->S (FR)	A	0.16647	1.73445	25.53320
	CON->S (FR)	-	0.02895	0.72810	11.22260
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.09702	1.51878	20.52490
	A->S (FR)	B	0.15989	1.47675	17.66920
	B->S (RR)	!A	0.10747	1.47095	19.64810
	B->S (FR)	A	0.15854	1.54648	18.56720
	CON->S (FR)	-	0.03258	0.81469	11.18020

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->S (FF)	!B	0.11082	1.87642	30.35180
	A->S (RF)	B	0.16134	1.29751	18.10010
	B->S (FF)	!A	0.12924	1.89903	30.38250
	B->S (RF)	A	0.16507	1.29194	18.18340
	CON->S (RF)	-	0.02269	0.63781	9.88335
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.10677	1.65171	22.30580
	A->S (RF)	B	0.15112	1.16293	13.23910
	B->S (FF)	!A	0.12530	1.67154	22.28420
	B->S (RF)	A	0.15494	1.16119	13.28530
	CON->S (RF)	-	0.02578	0.68966	9.49989

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00805	0.00799	0.01810
	B	0.00000	0.00000	0.00000
	B	0.00718	0.00693	0.02036
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00659	0.00648	0.02015
	B	0.00000	0.00000	0.00000
	B	0.00571	0.00542	0.02088

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.01268	0.01300	0.03328
	B	0.00000	0.00000	0.00000
	B	0.01313	0.01427	0.03594
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01121	0.01144	0.02988
	B	0.00000	0.00000	0.00000
	B	0.01167	0.01255	0.03141

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00804	0.00804	0.01932
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01106	0.01127	0.01791
	B	A	0.00000	0.00000	0.00000
	B	A	0.00717	0.00701	0.02128
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01248	0.01251	0.01595
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00657	0.00647	0.02010
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01009	0.01018	0.01603
	B	A	0.00000	0.00000	0.00000
	B	A	0.00570	0.00542	0.02081
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01151	0.01147	0.01411

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01268	0.01302	0.03209
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00162	0.00189	0.00679
	B	A	0.00000	0.00000	0.00000
	B	A	0.01314	0.01417	0.03383
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00293	0.00300	0.00722
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01121	0.01144	0.02972
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00036	0.00045	0.00330
	B	A	0.00000	0.00000	0.00000
	B	A	0.01167	0.01252	0.03118
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00167	0.00162	0.00426

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.01270	0.01308	0.03354
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00166	0.00215	0.00895
	B	A	0.00000	0.00000	0.00000
	B	A	0.01314	0.01428	0.03608
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00298	0.00321	0.00900
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01122	0.01145	0.02998
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00037	0.00050	0.00337
	B	A	0.00000	0.00000	0.00000
	B	A	0.01168	0.01255	0.03189
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00170	0.00166	0.00448

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00805	0.00803	0.01823
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01108	0.01160	0.01746
	B	A	0.00000	0.00000	0.00000
	B	A	0.00718	0.00699	0.02017
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01251	0.01271	0.01678
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00659	0.00647	0.02011
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01010	0.01049	0.01548
	B	A	0.00000	0.00000	0.00000
	B	A	0.00571	0.00544	0.02141
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01152	0.01155	0.01418

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__and2_1	12.45420
sky130_osu_sc_18T_ms__and2_2	15.38460
sky130_osu_sc_18T_ms__and2_4	21.24540
sky130_osu_sc_18T_ms__and2_6	27.10620
sky130_osu_sc_18T_ms__and2_8	32.96700
sky130_osu_sc_18T_ms__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__and2_1	0.00558	0.00569	3.00773
sky130_osu_sc_18T_ms__and2_2	0.00558	0.00569	5.76651
sky130_osu_sc_18T_ms__and2_4	0.00559	0.00570	10.95982
sky130_osu_sc_18T_ms__and2_6	0.00562	0.00570	16.04707
sky130_osu_sc_18T_ms__and2_8	0.00561	0.00571	20.61168
sky130_osu_sc_18T_ms__and2_l	0.00432	0.00442	2.07770

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	0.33660	0.53843
sky130_osu_sc_18T_ms__and2_2	0.00000	0.53843	0.53906
sky130_osu_sc_18T_ms__and2_4	0.00000	0.94209	1.07623
sky130_osu_sc_18T_ms__and2_6	0.00000	1.34576	1.61402
sky130_osu_sc_18T_ms__and2_8	0.00000	1.74942	2.15182
sky130_osu_sc_18T_ms__and2_l	0.00000	0.21362	0.34172

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__and2_1	A->Y (RR)	0.07075	0.55644	7.02517
	B->Y (RR)	0.07565	0.55848	6.87417
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.08207	0.51740	7.01920
	B->Y (RR)	0.08696	0.51417	6.88415
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.11298	0.54464	7.24471
	B->Y (RR)	0.11786	0.53257	7.13057
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.14283	0.58641	7.44443
	B->Y (RR)	0.14763	0.56815	7.33401
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.17278	0.63071	7.62946
	B->Y (RR)	0.17769	0.60882	7.51754
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.07906	0.62933	7.03969
	B->Y (RR)	0.08427	0.63080	6.92484

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__and2_1	A->Y (FF)	0.06183	0.55957	6.86818
	B->Y (FF)	0.06534	0.57354	6.90074
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.06982	0.52049	6.80626
	B->Y (FF)	0.07406	0.53351	6.85155
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.09501	0.54124	6.97645
	B->Y (FF)	0.09932	0.55148	7.03296
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.12337	0.57954	7.12861
	B->Y (FF)	0.12755	0.58925	7.18601
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.14930	0.61490	7.12779
	B->Y (FF)	0.15361	0.62182	7.18347
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.06722	0.61823	6.77302
	B->Y (FF)	0.07175	0.63500	6.82881

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00587	0.00670	0.06043
	B	0.00000	0.00000	0.00000
	B	0.00599	0.00584	0.03936
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01209	0.01307	0.06474
	B	0.00000	0.00000	0.00000
	B	0.01218	0.01242	0.04379
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02571	0.02715	0.07536
	B	0.00000	0.00000	0.00000
	B	0.02584	0.02698	0.05589
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.04056	0.04166	0.08735
	B	0.00000	0.00000	0.00000
	B	0.04072	0.04110	0.07113
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.05603	0.05569	0.10168
	B	0.00000	0.00000	0.00000
	B	0.05631	0.05559	0.08397
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00434	0.00482	0.04020
	B	0.00000	0.00000	0.00000
	B	0.00445	0.00423	0.02758

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.01517	0.01811	0.06747
	B	0.00000	0.00000	0.00000
	B	0.01712	0.01968	0.06627
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01931	0.02276	0.07206
	B	0.00000	0.00000	0.00000
	B	0.02131	0.02414	0.07083
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.03013	0.03419	0.08291
	B	0.00000	0.00000	0.00000
	B	0.03208	0.03539	0.08166
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.04095	0.04623	0.09415
	B	0.00000	0.00000	0.00000
	B	0.04295	0.04659	0.09264
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.05342	0.05685	0.10639
	B	0.00000	0.00000	0.00000
	B	0.05540	0.05723	0.10325
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01176	0.01352	0.04481
	B	0.00000	0.00000	0.00000
	B	0.01324	0.01472	0.04473

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00584	-0.00588	-0.00588
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00584	-0.00588	-0.00588
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00583	-0.00587	-0.00587
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00585	-0.00590	-0.00589
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00582	-0.00586	-0.00586
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00431	-0.00433	-0.00434

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00588	0.00591	0.00590
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00587	0.00591	0.00590
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00587	0.00592	0.00591
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00591	0.00595	0.00594
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00588	0.00593	0.00592
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00433	0.00436	0.00435

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00554	-0.00558	-0.00554
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00553	-0.00557	-0.00554
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00553	-0.00556	-0.00554
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00552	-0.00556	-0.00553
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00552	-0.00555	-0.00553
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00408	-0.00408	-0.00409

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00558	0.00560	0.00556
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00559	0.00560	0.00557
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00559	0.00561	0.00557
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00560	0.00561	0.00557
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00560	0.00561	0.00558
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00412	0.00412	0.00410

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ms__aoi21_l	0.00531	0.00551	0.00532	1.43645

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	0.12375	0.26890

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi21_l	A0->Y (FR)	0.07152	0.84137	10.36080
	A1->Y (FR)	0.06110	0.80041	9.97640
	B0->Y (FR)	0.05142	0.82773	10.54920

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi21_l	A0->Y (RF)	0.05088	0.60542	7.45010
	A1->Y (RF)	0.04614	0.62851	7.87588
	B0->Y (RF)	0.03075	0.60884	7.84378

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01384	0.01374	0.01808
	A1	0.00000	0.00000	0.00000
	A1	0.01165	0.01156	0.01593
	B0	0.00827	0.00841	0.01836

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00292	0.00250	0.00525
	A1	0.00000	0.00000	0.00000
	A1	0.00295	0.00268	0.00631
	B0	-0.00157	-0.00143	0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00445	-0.00517	-0.00519
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00524	-0.00526	-0.00525
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00525	-0.00528	-0.00525

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00515	0.00517	0.00519
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00525	0.00528	0.00527
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00529	0.00528	0.00527

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00442	-0.00516	-0.00513
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00518	-0.00521	-0.00519
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00558	-0.00563	-0.00563

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00510	0.00517	0.00513
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00518	0.00524	0.00521
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00562	0.00566	0.00564

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00242	-0.00244	-0.00243

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00264	0.00265	0.00248

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_18T_ms__aoi22_l	0.00532	0.00552	0.00568	0.00545	1.35829

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__aoi22_l	0.00000	0.13594	0.53779

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi22_l	A0->Y (FR)	0.09065	0.85975	10.19320
	A1->Y (FR)	0.08052	0.83232	10.00280
	B0->Y (FR)	0.05377	0.81361	10.20320
	B1->Y (FR)	0.06407	0.84694	10.46840

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi22_l	A0->Y (RF)	0.06719	0.61200	7.21791
	A1->Y (RF)	0.06247	0.63482	7.64612
	B0->Y (RF)	0.03373	0.60282	7.62125
	B1->Y (RF)	0.03852	0.57926	7.19317

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.01698	0.01687	0.02162
	A1	0.01481	0.01466	0.01931
	B0	0.00896	0.00960	0.02145
	B1	0.01113	0.01166	0.02352

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00611	0.00565	0.00852
	A1	0.00616	0.00582	0.00966
	B0	-0.00111	-0.00098	0.00296
	B1	-0.00095	-0.00108	0.00193

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00447	-0.00519	-0.00519
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00524	-0.00526	-0.00525
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00524	-0.00528	-0.00525
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00524	-0.00528	-0.00525

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00515	0.00519	0.00519
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00525	0.00529	0.00527
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00529	0.00528	0.00526
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00529	0.00528	0.00526

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00444	-0.00512	-0.00513
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00518	-0.00521	-0.00519
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00558	-0.00562	-0.00562
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00558	-0.00562	-0.00562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00510	0.00512	0.00513
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00519	0.00525	0.00521
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00562	0.00566	0.00564
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00562	0.00566	0.00564

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00243	-0.00245	-0.00244
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00242	-0.00243	-0.00243
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00572	-0.00574	-0.00576
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00572	-0.00575	-0.00576

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00274	0.00275	0.00251
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00243	0.00245	0.00243
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00575	0.00581	0.00578
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00575	0.00581	0.00578

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00244	-0.00246	-0.00245
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00243	-0.00245	-0.00245
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00532	-0.00535	-0.00533
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00532	-0.00534	-0.00533

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00275	0.00276	0.00253
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00244	0.00245	0.00245
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00537	0.00537	0.00534
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00537	0.00537	0.00534

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__buf_1	9.52380
sky130_osu_sc_18T_ms__buf_2	12.45420
sky130_osu_sc_18T_ms__buf_4	18.31500
sky130_osu_sc_18T_ms__buf_6	24.17580
sky130_osu_sc_18T_ms__buf_8	30.03660
sky130_osu_sc_18T_ms__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ms__buf_1	0.00569	2.99163
sky130_osu_sc_18T_ms__buf_2	0.00569	5.82578
sky130_osu_sc_18T_ms__buf_4	0.00569	11.09878
sky130_osu_sc_18T_ms__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00571	21.10513
sky130_osu_sc_18T_ms__buf_l	0.00446	2.06457

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	0.26953	0.26953
sky130_osu_sc_18T_ms__buf_2	0.00000	0.40430	0.53843
sky130_osu_sc_18T_ms__buf_4	0.00000	0.67383	1.07623
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	1.21288	2.15182
sky130_osu_sc_18T_ms__buf_l	0.00000	0.17099	0.17099

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__buf_1	**A->Y (RR)**	0.05535	0.52411	6.77917
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.06217	0.47690	6.81524
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.08382	0.48656	7.01043
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.12496	0.54963	7.36519
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.06189	0.59193	6.76108

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__buf_1	**A->Y (FF)**	0.05886	0.55063	6.85347
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.06758	0.51759	6.91643
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.09283	0.53874	7.07619
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.14694	0.61391	7.29007
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.06495	0.61058	6.75620

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00546	0.00627	0.04749
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01162	0.01251	0.05022
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02497	0.02714	0.06241
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.05309	0.05578	0.08998
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00417	0.00464	0.03460

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.01456	0.01741	0.06660
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01869	0.02191	0.07081
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02947	0.03317	0.08155
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.05299	0.05546	0.10345
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01139	0.01314	0.04482

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
	-0.00077	-0.00078	-0.00076

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
	0.00077	0.00078	0.00076

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dffr_1	63.73620
sky130_osu_sc_18T_ms__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_ms__dffr_1	0.00547	0.00542	0.01563	2.90932	2.90953
sky130_osu_sc_18T_ms__dffr_l	0.00547	0.00542	0.01561	2.07671	2.07948

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	0.82246	1.26992
sky130_osu_sc_18T_ms__dffr_l	0.00000	0.72391	1.17138

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->Q (RR)	0.26421	1.33841	16.87180
	QN->Q (FR)	0.03016	0.79358	12.18500
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.26074	1.44624	16.58250
	QN->Q (FR)	0.03208	0.83645	11.90120

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->Q (RF)	0.27043	1.37192	17.44710
	QN->Q (RF)	0.02805	0.75933	11.66100
	RN->Q (FF)	0.20153	1.37362	18.24060
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.27410	1.49942	17.24170
	QN->Q (RF)	0.02872	0.76708	10.89740
	RN->Q (FF)	0.20559	1.50047	18.02670

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->QN (RR)	0.23674	0.73530	6.89360
	RN->QN (FR)	0.16785	0.73729	7.68546
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.23698	0.79041	6.94244
	RN->QN (FR)	0.16838	0.79231	7.72795

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	**CK->QN (RF)**	0.22567	0.70409	6.40862
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.21793	0.72456	6.13121

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.06237	-0.08002	-0.06254
	setup	CK (R)	0.21124	0.25143	0.79531
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06246	-0.08002	-0.06281
	setup	CK (R)	0.21163	0.25202	0.80342

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.10371	-0.32200	-2.21062
	setup	CK (R)	0.13255	0.33325	2.85287
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.10540	-0.32075	-2.15466
	setup	CK (R)	0.13242	0.33325	2.85281

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.06237	-0.08002	-0.06254
	setup	CK (R)	0.21124	0.25143	0.79531
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06246	-0.08002	-0.06281
	setup	CK (R)	0.21163	0.25202	0.80342

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	hold	CK (R)	-0.10371	-0.32200	-2.21062
	setup	CK (R)	0.13255	0.33325	2.85287
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.10540	-0.32075	-2.15466
	setup	CK (R)	0.13242	0.33325	2.85281

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	recovery	CK (R)	0.16934	0.21067	1.02736
	removal	CK (R)	-0.03388	-0.03996	-0.11192
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.16952	0.21138	1.03170
	removal	CK (R)	-0.03388	-0.03996	-0.11192

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	recovery	CK (R)	0.16934	0.21067	1.02736
	removal	CK (R)	-0.03388	-0.03996	-0.11192
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.16952	0.21138	1.03170
	removal	CK (R)	-0.03388	-0.03996	-0.11192

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	min_pulse_width	RN ()	0.11683	0.51270	13.33370
	min_pulse_width	RN ()	0.11683	0.51270	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.11683	0.51270	13.33370
	min_pulse_width	RN ()	0.11683	0.51270	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_18T_ms__dffr_1	min_pulse_width	CK ()	0.12068	0.51270	13.33370
	min_pulse_width	CK ()	0.13989	0.51270	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.11683	0.51270	13.33370
	min_pulse_width	CK ()	0.13605	0.51270	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_18T_ms__dffr_1	min_pulse_width	CK ()	0.26672	0.51270	13.33370
	min_pulse_width	CK ()	0.10915	0.51270	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.26672	0.51270	13.33370
	min_pulse_width	CK ()	0.10915	0.51270	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01476	0.01069	0.00000
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01312	0.01064	0.00979

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01683	0.01383	0.00000
	RN	-0.00192	-0.13692	-2.35652
	RN	0.03919	0.03690	0.01633
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01518	0.01340	0.01613
	RN	-0.00192	-0.11185	-1.68213
	RN	0.03752	0.03648	0.04142

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01682	0.01380	0.00000
	RN	-0.00192	-0.13693	-2.35588
	RN	0.03917	0.03690	0.01645
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01517	0.01338	0.01592
	RN	-0.00192	-0.11194	-1.68415
	RN	0.03750	0.03646	0.04125

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01470	0.01058	0.00000
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01306	0.01059	0.00932

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00431	-0.00507	-0.00516
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01843	0.01782	0.04620
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00818	0.00768	0.03641
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00431	-0.00507	-0.00516
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01843	0.01781	0.04620
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00818	0.00767	0.03641

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00514	0.00520	0.00519
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03088	0.03086	0.06158
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01457	0.01462	0.04488
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00514	0.00520	0.00519
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03088	0.03086	0.06158
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01457	0.01462	0.04488

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00561	0.00632	0.06408
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01604	0.01641	0.07475
sky130_osu_sc_18T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00561	0.00631	0.06408
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01604	0.01635	0.07475

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01372	0.01618	0.07634
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02946	0.03133	0.09183
sky130_osu_sc_18T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01371	0.01618	0.07634
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02946	0.03132	0.09183

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00123	-0.00091	0.05641
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00878	0.00812	0.06726
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00188	-0.00148	0.05519
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00123	-0.00091	0.05641
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00877	0.00812	0.06725
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00188	-0.00148	0.05519

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02099	0.02352	0.08364
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04657	0.04748	0.11677
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03566	0.03730	0.09768
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04558	0.04977	0.15105
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02416	0.02650	0.08567
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02098	0.02352	0.08364
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04656	0.04748	0.11677
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03566	0.03730	0.09768
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04558	0.04978	0.15105
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02415	0.02650	0.08567

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dffsr_1	69.59700
sky130_osu_sc_18T_ms__dffsr_l	69.59700

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_18T_ms__dffsr_1	0.00542	0.00543	0.01165	0.01592	3.07051	3.05684
sky130_osu_sc_18T_ms__dffsr_l	0.00542	0.00543	0.01164	0.01592	2.07771	2.08473

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffsr_1	0.00000	0.91025	1.27051
sky130_osu_sc_18T_ms__dffsr_l	0.00000	0.81171	1.17197

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->Q (RR)	0.27162	1.33756	16.98870
	QN->Q (FR)	0.02860	0.77509	12.04740
	RN->Q (RR)	0.21717	1.29454	16.99110
	SN->Q (FR)	0.19840	1.36362	18.04510
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.27571	1.46729	16.60650
	QN->Q (FR)	0.03201	0.83395	11.86660
	RN->Q (RR)	0.22235	1.42634	16.61210
	SN->Q (FR)	0.20273	1.49055	17.65510

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->Q (RF)	0.30542	1.39698	17.60400
	QN->Q (RF)	0.02558	0.71566	11.14520
	RN->Q (FF)	0.20587	1.37235	18.37920
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.31334	1.54169	17.27860
	QN->Q (RF)	0.02866	0.76519	10.88660
	RN->Q (FF)	0.21351	1.51617	18.05400

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->QN (RR)	0.27270	0.77237	7.00481
	RN->QN (FR)	0.17361	0.74835	7.78583
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.27566	0.83351	6.99826
	RN->QN (FR)	0.17643	0.80915	7.77325

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->QN (RF)	0.23541	0.71196	6.40953
	RN->QN (RF)	0.18187	0.67024	6.41727
	SN->QN (FF)	0.16259	0.73864	7.45996
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.23375	0.74757	6.18360
	RN->QN (RF)	0.18069	0.70664	6.18843
	SN->QN (FF)	0.16115	0.77073	7.22395

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.06402	-0.08709	-0.10589
	setup	CK (R)	0.20701	0.24567	0.82670
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.06434	-0.08760	-0.10619
	setup	CK (R)	0.20949	0.24885	0.82625

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.11961	-0.33675	-2.36477
	setup	CK (R)	0.15211	0.35013	2.91165
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.11724	-0.33841	-2.37043
	setup	CK (R)	0.15191	0.35013	2.91165

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.06402	-0.08709	-0.10589
	setup	CK (R)	0.20701	0.24567	0.82670
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.06434	-0.08760	-0.10619
	setup	CK (R)	0.20949	0.24885	0.82625

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	hold	CK (R)	-0.11961	-0.33675	-2.36477
	setup	CK (R)	0.15211	0.35013	2.91165
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.11724	-0.33841	-2.37043
	setup	CK (R)	0.15191	0.35013	2.91165

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.15328	0.18864	0.96062
	removal	CK (R)	-0.01659	-0.02411	-0.06931
	hold	SN (R)	-0.15238	-0.32048	-1.34506
	setup	SN (R)	0.17968	0.37730	4.73241
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.15373	0.18703	0.95762
	removal	CK (R)	-0.01659	-0.02411	-0.06931
	hold	SN (R)	-0.15255	-0.31398	-1.30853
	setup	SN (R)	0.17797	0.37039	4.63065

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.15328	0.18864	0.96062
	removal	CK (R)	-0.01659	-0.02411	-0.06931
	hold	SN (R)	-0.15238	-0.32048	-1.34506
	hold	SN (R)	-0.15354	-0.32076	-1.34784
	setup	SN (R)	0.17968	0.37285	4.54497
	setup	SN (R)	0.17428	0.37730	4.73241
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.15373	0.18703	0.95762
	removal	CK (R)	-0.01659	-0.02411	-0.06931
	hold	SN (R)	-0.15302	-0.31398	-1.30853
	hold	SN (R)	-0.15255	-0.31439	-1.31434
	setup	SN (R)	0.17797	0.36815	4.43526
	setup	SN (R)	0.16623	0.37039	4.63065

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	min_pulse_width	RN ()	0.13605	0.51270	13.33370
	min_pulse_width	RN ()	0.13605	0.51270	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.13605	0.51270	13.33370
	min_pulse_width	RN ()	0.13221	0.51270	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.04039	0.08172	4.54985
	removal	CK (R)	-0.01918	-0.06539	-0.28535
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03966	0.08170	4.40571
	removal	CK (R)	-0.01918	-0.06539	-0.28535

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.04039	0.08172	4.54985
	removal	CK (R)	-0.01918	-0.06539	-0.28535
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03966	0.08170	4.40571
	removal	CK (R)	-0.01918	-0.06539	-0.28535

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	min_pulse_width	SN ()	0.15911	0.51270	13.33370
	min_pulse_width	SN ()	0.15527	0.51270	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.15911	0.51270	13.33370
	min_pulse_width	SN ()	0.14758	0.51270	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_18T_ms__dffsr_1	min_pulse_width	CK ()	0.12452	0.51270	13.33370
	min_pulse_width	CK ()	0.15527	0.51270	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.12068	0.51270	13.33370
	min_pulse_width	CK ()	0.15142	0.51270	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_18T_ms__dffsr_1	min_pulse_width	CK ()	0.26672	0.51270	13.33370
	min_pulse_width	CK ()	0.13221	0.51270	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.26672	0.51270	13.33370
	min_pulse_width	CK ()	0.13221	0.51270	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01858	0.01601	0.00259
	RN	0.03407	0.03120	0.00714
	SN	-0.00192	-0.14142	-2.48711
	SN	0.03822	0.03468	0.00392
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01707	0.01451	0.01323
	RN	0.03255	0.02972	0.01716
	SN	-0.00192	-0.11188	-1.68295
	SN	0.03669	0.03324	0.01421

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01963	0.01721	0.00065
	RN	-0.00192	-0.14142	-2.48710
	RN	0.04035	0.03839	0.02496
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01811	0.01648	0.01986
	RN	-0.00192	-0.11188	-1.68294
	RN	0.03881	0.03767	0.04376

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01960	0.01717	0.00080
	RN	-0.00192	-0.14105	-2.47566
	RN	0.04030	0.03836	0.02477
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01809	0.01646	0.01958
	RN	-0.00192	-0.11210	-1.68840
	RN	0.03877	0.03761	0.04336

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01852	0.01603	0.00254
	RN	0.03400	0.03113	0.00639
	SN	-0.00192	-0.14105	-2.47590
	SN	0.03815	0.03465	0.00433
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01701	0.01446	0.01244
	RN	0.03248	0.02963	0.01665
	SN	-0.00192	-0.11210	-1.68851
	SN	0.03662	0.03314	0.01385

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00505	-0.00513	-0.00515
	(!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)	0.02357	0.02295	0.05118
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00920	0.00870	0.03707
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00918	0.00869	0.03712
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00925	0.00876	0.03713
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00505	-0.00513	-0.00515
	(!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)	0.02357	0.02295	0.05118
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00920	0.00870	0.03707
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00918	0.00868	0.03713
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00925	0.00876	0.03713

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00516	0.00518	0.00515
	(!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)	0.03515	0.03497	0.06486
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01522	0.01535	0.04538
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01545	0.01544	0.04540
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01516	0.01529	0.04532
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00516	0.00518	0.00515
	(!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)	0.03514	0.03496	0.06485
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01521	0.01534	0.04537
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01544	0.01542	0.04539
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01515	0.01528	0.04531

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.00447	0.00494	0.06275
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01907	0.01911	0.07771
sky130_osu_sc_18T_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)	0.00447	0.00496	0.06276
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01908	0.01912	0.07771

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.01451	0.01723	0.07770
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03089	0.03276	0.09354
sky130_osu_sc_18T_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)	0.01449	0.01725	0.07769
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03087	0.03275	0.09353

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	-0.01159	-0.01167	-0.01167
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01064	-0.01201	-0.01196
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01085	-0.01152	-0.01151
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00797	0.00758	0.03840
sky130_osu_sc_18T_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)	-0.01159	-0.01167	-0.01167
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01062	-0.01199	-0.01194
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01084	-0.01151	-0.01150
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00798	0.00760	0.03841

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_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)	0.01164	0.01176	0.01172
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01193	0.01207	0.01200
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01150	0.01161	0.01156
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02419	0.02384	0.05357
sky130_osu_sc_18T_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)	0.01167	0.01176	0.01172
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01191	0.01205	0.01198
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01150	0.01160	0.01155
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02418	0.02384	0.05356

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00123	-0.00091	0.05643
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00989	0.00925	0.06834
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00962	0.00902	0.06821
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00162	-0.00121	0.05546
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00631	0.00684	0.11311
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00123	-0.00091	0.05643
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00988	0.00924	0.06833
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00961	0.00900	0.06820
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00162	-0.00122	0.05546
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00631	0.00684	0.11311

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_ms__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05203	0.05302	0.12198
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02105	0.02358	0.08372
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03634	0.03797	0.09828
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03641	0.03803	0.09822
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04981	0.05356	0.15487
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02396	0.02630	0.08549
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02807	0.03250	0.14281
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05203	0.05301	0.12198
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02104	0.02358	0.08372
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03634	0.03797	0.09828
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03641	0.03803	0.09822
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04979	0.05358	0.15486
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02395	0.02630	0.08549
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02806	0.03248	0.14280

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dffs_1	57.87540
sky130_osu_sc_18T_ms__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_ms__dffs_1	0.00545	0.00926	0.01570	2.92225	2.92250
sky130_osu_sc_18T_ms__dffs_l	0.00545	0.00926	0.01570	2.11009	2.09027

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	0.82174	1.22318
sky130_osu_sc_18T_ms__dffs_l	0.00000	0.72320	1.12464

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->Q (RR)	0.20419	1.26647	16.78670
	QN->Q (FR)	0.02998	0.78890	12.10860
	SN->Q (FR)	0.15561	1.34218	17.75910
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.20492	1.38922	16.71060
	QN->Q (FR)	0.03191	0.83704	11.94000
	SN->Q (FR)	0.15677	1.45851	17.65950

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->Q (RF)	0.29828	1.40476	17.48310
	QN->Q (RF)	0.02782	0.75679	11.63620
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.30057	1.53807	17.48870
	QN->Q (RF)	0.02855	0.76649	10.96210

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->QN (RR)	0.26339	0.76794	6.91305
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.26235	0.82105	6.97571

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->QN (RF)	0.16882	0.63526	6.32906
	SN->QN (FF)	0.12002	0.71043	7.29958
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.16535	0.66192	6.06580
	SN->QN (FF)	0.11688	0.73088	7.01037

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.04930	-0.06679	-0.03552
	setup	CK (R)	0.14827	0.19300	0.82385
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04644	-0.06747	-0.03770
	setup	CK (R)	0.14732	0.19389	0.83201

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.10664	-0.32105	-1.73104
	setup	CK (R)	0.14372	0.33357	2.86628
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.10656	-0.32105	-1.68958
	setup	CK (R)	0.14346	0.33357	2.86628

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.04930	-0.06679	-0.03552
	setup	CK (R)	0.14827	0.19300	0.82385
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04644	-0.06747	-0.03770
	setup	CK (R)	0.14732	0.19389	0.83201

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	hold	CK (R)	-0.10664	-0.32105	-1.73104
	setup	CK (R)	0.14372	0.33357	2.86628
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.10656	-0.32105	-1.68958
	setup	CK (R)	0.14346	0.33357	2.86628

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	recovery	CK (R)	0.04258	0.08016	3.35430
	removal	CK (R)	-0.01828	-0.05906	-0.31995
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.04241	0.08000	3.25849
	removal	CK (R)	-0.01828	-0.05906	-0.31995

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	recovery	CK (R)	0.04258	0.08016	3.35430
	removal	CK (R)	-0.01828	-0.05906	-0.31995
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.04241	0.08000	3.25849
	removal	CK (R)	-0.01828	-0.05906	-0.31995

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	min_pulse_width	SN ()	0.10530	0.51270	13.33370
	min_pulse_width	SN ()	0.10530	0.51270	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.10530	0.51270	13.33370
	min_pulse_width	SN ()	0.10146	0.51270	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_18T_ms__dffs_1	min_pulse_width	CK ()	0.08993	0.51270	13.33370
	min_pulse_width	CK ()	0.14758	0.51270	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.08609	0.51270	13.33370
	min_pulse_width	CK ()	0.14374	0.51270	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_18T_ms__dffs_1	min_pulse_width	CK ()	0.20523	0.51270	13.33370
	min_pulse_width	CK ()	0.12452	0.51270	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.20523	0.51270	13.33370
	min_pulse_width	CK ()	0.12452	0.51270	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01476	0.01059	0.00000
	SN	-0.00192	-0.13728	-2.36702
	SN	0.03230	0.02799	-0.01951
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01312	0.01055	0.01030
	SN	-0.00192	-0.11292	-1.70918
	SN	0.03065	0.02797	0.01215

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01670	0.01390	0.00000
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01504	0.01340	0.01735

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01669	0.01389	0.00000
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01503	0.01340	0.01752

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01470	0.01065	0.00000
	SN	-0.00192	-0.13729	-2.36695
	SN	0.03225	0.02794	-0.01952
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01306	0.01059	0.00973
	SN	-0.00192	-0.11228	-1.69300
	SN	0.03059	0.02791	0.01528

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00511	-0.00518	-0.00521
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01758	0.01695	0.04617
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00796	0.00747	0.03616
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00511	-0.00519	-0.00521
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01758	0.01695	0.04617
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00796	0.00747	0.03616

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00522	0.00524	0.00521
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02976	0.02956	0.06016
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01461	0.01477	0.04517
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00522	0.00524	0.00521
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02976	0.02956	0.06016
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01461	0.01477	0.04517

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00861	-0.00868	-0.00865
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00617	0.00638	0.03842
sky130_osu_sc_18T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00859	-0.00868	-0.00865
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00617	0.00638	0.03842

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00866	0.00874	0.00868
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01679	0.01747	0.05229
sky130_osu_sc_18T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00866	0.00874	0.00868
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01679	0.01747	0.05229

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00126	-0.00093	0.05647
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00176	-0.00136	0.05540
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00500	0.00572	0.11296
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00126	-0.00094	0.05647
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00176	-0.00136	0.05540
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00500	0.00572	0.11296

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04592	0.04685	0.11706
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02099	0.02353	0.08373
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04432	0.04811	0.14963
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02402	0.02637	0.08562
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02735	0.03191	0.14297
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04592	0.04686	0.11706
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02099	0.02353	0.08373
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04432	0.04824	0.14963
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02402	0.02637	0.08562
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02735	0.03191	0.14297

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dff_1	48.35160
sky130_osu_sc_18T_ms__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_ms__dff_1	0.00560	0.01553	3.07446	3.08541
sky130_osu_sc_18T_ms__dff_l	0.00560	0.01553	2.04718	2.04644

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	0.83904	1.07805
sky130_osu_sc_18T_ms__dff_l	0.00000	0.74050	0.97951

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->Q (RR)	0.18216	1.23118	16.81530
	QN->Q (FR)	0.02839	0.77025	11.99420
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.18918	1.36282	16.29150
	QN->Q (FR)	0.03256	0.84211	11.93850

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->Q (RF)	0.25216	1.33569	17.51670
	QN->Q (RF)	0.02545	0.71178	11.11440
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.26156	1.48366	17.09730
	QN->Q (RF)	0.02861	0.75891	10.76240

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->QN (RR)	0.22058	0.71400	6.97765
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.22469	0.77772	6.90028

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->QN (RF)	0.14916	0.60943	6.30446
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.15008	0.64363	5.92090

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dff_1	hold	CK (R)	-0.04248	-0.06384	-0.04615
	setup	CK (R)	0.12548	0.17287	0.84937
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.04614	-0.06452	-0.04771
	setup	CK (R)	0.12206	0.17334	0.85018

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dff_1	hold	CK (R)	-0.09645	-0.32060	-1.53854
	setup	CK (R)	0.11762	0.33125	2.86428
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.09662	-0.32060	-1.56683
	setup	CK (R)	0.11762	0.33125	2.86428

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dff_1	min_pulse_width	CK ()	0.08224	0.51270	13.33370
	min_pulse_width	CK ()	0.13221	0.51270	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.07840	0.51270	13.33370
	min_pulse_width	CK ()	0.13221	0.51270	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_18T_ms__dff_1	**min_pulse_width**	**CK ()**	0.18217	0.51270	13.33370
	min_pulse_width	**CK ()**	0.09377	0.51270	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.18217	0.51270	13.33370
	min_pulse_width	**CK ()**	0.09377	0.51270	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01553	0.01305	0.00248
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01402	0.01148	0.01302

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01703	0.01469	0.00013
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01554	0.01375	0.01579

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01702	0.01468	-0.00006
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01554	0.01374	0.01562

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01548	0.01303	0.00238
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01397	0.01153	0.01259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00432	-0.00506	-0.00515
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01643	0.01624	0.04570
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00432	-0.00506	-0.00515
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01644	0.01624	0.04571

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00513	0.00518	0.00517
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03058	0.03048	0.06134
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00513	0.00518	0.00517
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03058	0.03049	0.06139

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00127	-0.00094	0.05649
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00175	-0.00123	0.05544
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00127	-0.00094	0.05649
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00175	-0.00133	0.05544

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02092	0.02347	0.08367
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04487	0.04593	0.11675
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04497	0.04897	0.15141
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02393	0.02636	0.08553
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02092	0.02346	0.08366
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04488	0.04596	0.11675
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04497	0.04897	0.15142
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02392	0.02629	0.08553

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__inv_1	6.59340
sky130_osu_sc_18T_ms__inv_10	32.96700
sky130_osu_sc_18T_ms__inv_2	9.52380
sky130_osu_sc_18T_ms__inv_3	12.45420
sky130_osu_sc_18T_ms__inv_4	15.38460
sky130_osu_sc_18T_ms__inv_6	21.24540
sky130_osu_sc_18T_ms__inv_8	27.10620
sky130_osu_sc_18T_ms__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ms__inv_1	0.00547	2.89341
sky130_osu_sc_18T_ms__inv_10	0.05161	24.92361
sky130_osu_sc_18T_ms__inv_2	0.01051	5.59062
sky130_osu_sc_18T_ms__inv_3	0.01568	7.99717
sky130_osu_sc_18T_ms__inv_4	0.02076	10.76975
sky130_osu_sc_18T_ms__inv_6	0.03112	15.82947
sky130_osu_sc_18T_ms__inv_8	0.04138	20.72762
sky130_osu_sc_18T_ms__inv_l	0.00421	1.99113

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	0.13477	0.26890
sky130_osu_sc_18T_ms__inv_10	0.00000	1.34765	2.68899
sky130_osu_sc_18T_ms__inv_2	0.00000	0.26953	0.53780
sky130_osu_sc_18T_ms__inv_3	0.00000	0.40430	0.80670
sky130_osu_sc_18T_ms__inv_4	0.00000	0.53906	1.07560
sky130_osu_sc_18T_ms__inv_6	0.00000	0.80859	1.61339
sky130_osu_sc_18T_ms__inv_8	0.00000	1.07812	2.15119
sky130_osu_sc_18T_ms__inv_l	0.00000	0.08549	0.17073

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__inv_1	**A->Y (FR)**	0.02670	0.69828	10.63980
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.04316	0.48003	10.50910
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.02258	0.60488	10.52010
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.02540	0.57004	10.54720
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.02661	0.54071	10.53760
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.03076	0.50774	10.55540
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.03659	0.48994	10.54750
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.03007	0.76616	10.74680

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__inv_1	**A->Y (RF)**	0.02276	0.62460	9.53775
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.03958	0.40078	9.13051
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.01954	0.53420	9.38909
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.02171	0.49694	9.40075
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.02217	0.46891	9.40033
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.02829	0.43603	9.37566
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.03377	0.41526	9.32467
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02540	0.66478	9.38669

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	0.00767	0.00875	0.01735
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.06746	0.08426	0.17172
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01379	0.01670	0.03343
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02112	0.02488	0.05064
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.02728	0.03394	0.06601
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.04048	0.05033	0.10005
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.05376	0.06632	0.13484
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00593	0.00647	0.01185

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00186	-0.00156	0.00120
sky130_osu_sc_18T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02584	-0.02363	0.00761
sky130_osu_sc_18T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00565	-0.00475	0.00093
sky130_osu_sc_18T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00755	-0.00608	0.00251
sky130_osu_sc_18T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.01133	-0.00955	0.00221
sky130_osu_sc_18T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01725	-0.01427	0.00382
sky130_osu_sc_18T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.02251	-0.01844	0.00560
sky130_osu_sc_18T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00132	-0.00102	0.00107

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_18T_ms__mux2_1	0.74135	0.74230	0.01110	0.77035

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	0.27071	0.27333

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__mux2_1	A0->Y (RR)	-	0.01501	0.29603	3.26912
	A1->Y (RR)	-	0.01596	0.29662	3.26234
	S0->Y (RR)	(!A0 * A1)	0.04694	0.29828	1.88469
	S0->Y (FR)	(A0 * !A1)	0.04002	0.39048	3.65793

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__mux2_1	A0->Y (FF)	-	0.01304	0.29512	3.26048
	A1->Y (FF)	-	0.01299	0.29389	3.25171
	S0->Y (FF)	(!A0 * A1)	0.05916	0.35704	2.55166
	S0->Y (RF)	(A0 * !A1)	0.02746	0.33869	3.12038

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00798	-0.00799	-0.00799
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00553	-0.00554	-0.00552
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00892	0.01191	0.07350
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00561	-0.00454	0.05485

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00798	0.00799	0.00799
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00553	0.00554	0.00554
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00143	0.00283	0.06314
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02072	0.02335	0.08398

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00200	-0.00200	-0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00201	0.00200	0.00200

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00237	-0.00237	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00237	0.00237	0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00213	-0.00088	0.05881
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00207	-0.00084	0.05921

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01562	0.01861	0.07903
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01403	0.01729	0.07837

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__nand2_1	9.52380
sky130_osu_sc_18T_ms__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__nand2_1	0.00548	0.00545	2.43544
sky130_osu_sc_18T_ms__nand2_l	0.00422	0.00420	1.64089

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	0.13477	0.53780
sky130_osu_sc_18T_ms__nand2_l	0.00000	0.08551	0.34147

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nand2_1	A->Y (FR)	0.02715	0.66736	9.71421
	B->Y (FR)	0.03212	0.66523	9.60507
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.03050	0.72281	9.66957
	B->Y (FR)	0.03654	0.72504	9.62653

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nand2_1	A->Y (RF)	0.03157	0.73363	10.84540
	B->Y (RF)	0.03616	0.71116	10.47490
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.03580	0.78944	10.58010
	B->Y (RF)	0.04020	0.77073	10.19300

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00816	0.00912	0.01757
	B	0.00000	0.00000	0.00000
	B	0.01039	0.01122	0.01981
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00626	0.00675	0.01219
	B	0.00000	0.00000	0.00000
	B	0.00789	0.00830	0.01378

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00133	-0.00120	0.00161
	B	0.00000	0.00000	0.00000
	B	-0.00125	-0.00127	0.00083
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00098	-0.00086	0.00132
	B	0.00000	0.00000	0.00000
	B	-0.00094	-0.00098	0.00073

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00575	-0.00579	-0.00579
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00420	-0.00422	-0.00423

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00576	0.00582	0.00580
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00422	0.00425	0.00424

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00537	-0.00539	-0.00537
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00392	-0.00394	-0.00392

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00541	0.00543	0.00539
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00395	0.00396	0.00393

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__nor2_1	9.52380
sky130_osu_sc_18T_ms__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__nor2_1	0.00548	0.00579	1.55685
sky130_osu_sc_18T_ms__nor2_l	0.00415	0.00449	1.06981

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	0.09206	0.26890
sky130_osu_sc_18T_ms__nor2_l	0.00000	0.06206	0.17073

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nor2_1	A->Y (FR)	0.05374	0.81044	10.42200
	B->Y (FR)	0.04015	0.79876	10.46920
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.05989	0.89186	10.39150
	B->Y (FR)	0.04786	0.89084	10.58830

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nor2_1	A->Y (RF)	0.03117	0.52603	6.77327
	B->Y (RF)	0.02430	0.51370	6.75288
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.03342	0.55649	6.65998
	B->Y (RF)	0.02698	0.54868	6.64273

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.01127	0.01128	0.01591
	B	0.00000	0.00000	0.00000
	B	0.00837	0.00905	0.02061
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00824	0.00819	0.01153
	B	0.00000	0.00000	0.00000
	B	0.00639	0.00667	0.01403

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00113	0.00100	0.00493
	B	0.00000	0.00000	0.00000
	B	-0.00144	-0.00120	0.00269
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00076	0.00077	0.00383
	B	0.00000	0.00000	0.00000
	B	-0.00096	-0.00080	0.00229

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00433	-0.00517	-0.00518
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00313	-0.00368	-0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00515	0.00519	0.00519
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00366	0.00370	0.00368

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00242	-0.00244	-0.00243
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00180	-0.00182	-0.00181

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00254	0.00256	0.00247
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00189	0.00190	0.00184

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ms__oai21_l	0.00553	0.00560	0.00468	1.53156

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	0.11028	0.43963

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai21_l	A0->Y (FR)	0.05394	0.81261	10.44690
	A1->Y (FR)	0.07130	0.82770	10.40330
	B0->Y (FR)	0.03755	0.70526	9.22064

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai21_l	A0->Y (RF)	0.04553	0.64303	8.18572
	A1->Y (RF)	0.05502	0.63682	7.96042
	B0->Y (RF)	0.03497	0.67623	8.82118

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.01152	0.01209	0.02186
	A1	0.00000	0.00000	0.00000
	A1	0.01442	0.01399	0.01855
	B0	0.00975	0.01007	0.01791

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00020	0.00004	0.00263
	A1	0.00000	0.00000	0.00000
	A1	0.00275	0.00236	0.00492
	B0	0.00087	0.00097	0.00412

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00243	-0.00245	-0.00244
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00511	-0.00521	-0.00519
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00527	-0.00530	-0.00527

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00255	0.00256	0.00248
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00515	0.00521	0.00519
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00527	0.00532	0.00529

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00426	-0.00510	-0.00510
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00506	-0.00515	-0.00515
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00521	-0.00525	-0.00522

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00507	0.00513	0.00511
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00513	0.00515	0.00515
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00522	0.00527	0.00524

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00428	-0.00431	-0.00435

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00435	0.00439	0.00437

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__oai22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ms__oai22_1	0.00537	0.00564	0.00578	0.00566	1.53672

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	0.13807	0.53780

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai22_l	A0->Y (FR)	0.07728	0.83348	10.38160
	A1->Y (FR)	0.06369	0.81869	10.43190
	B0->Y (FR)	0.04554	0.80220	10.43070
	B1->Y (FR)	0.05946	0.81669	10.38340

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai22_l	A0->Y (RF)	0.08057	0.69518	8.38856
	A1->Y (RF)	0.06323	0.66763	8.25848
	B0->Y (RF)	0.05298	0.69736	8.86808
	B1->Y (RF)	0.07156	0.73433	9.15276

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.01884	0.01873	0.02285
	A1	0.01594	0.01649	0.02600
	B0	0.00893	0.00973	0.02002
	B1	0.01490	0.01485	0.01895

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00468	0.00428	0.00677
	A1	-0.00062	-0.00078	0.00186
	B0	-0.00068	-0.00057	0.00300
	B1	0.00186	0.00160	0.00508

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00433	-0.00517	-0.00518
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00433	-0.00517	-0.00518
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00507	-0.00515	-0.00516
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00522	-0.00526	-0.00524

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00515	0.00519	0.00519
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00515	0.00519	0.00519
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00514	0.00515	0.00516
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00523	0.00528	0.00525

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00241	-0.00243	-0.00242
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00241	-0.00243	-0.00242
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00506	-0.00514	-0.00514
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00521	-0.00522	-0.00522

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00253	0.00255	0.00246
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00253	0.00255	0.00246
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00511	0.00514	0.00514
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00521	0.00526	0.00524

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00240	-0.00242	-0.00241
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00239	-0.00242	-0.00241
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00560	-0.00571	-0.00567
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00563	-0.00562	-0.00574

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00251	0.00253	0.00244
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00252	0.00254	0.00244
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00566	0.00571	0.00567
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00574	0.00578	0.00576

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00427	-0.00510	-0.00511
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00429	-0.00510	-0.00511
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00568	-0.00581	-0.00576
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00571	-0.00574	-0.00581

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00508	0.00512	0.00512
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00509	0.00517	0.00512
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00575	0.00582	0.00576
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00580	0.00585	0.00584

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__or2_1	12.45420
sky130_osu_sc_18T_ms__or2_2	15.38460
sky130_osu_sc_18T_ms__or2_4	21.24540
sky130_osu_sc_18T_ms__or2_8	32.96700
sky130_osu_sc_18T_ms__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__or2_1	0.00582	0.00561	2.99942
sky130_osu_sc_18T_ms__or2_2	0.00582	0.00561	5.74949
sky130_osu_sc_18T_ms__or2_4	0.00582	0.00562	10.97206
sky130_osu_sc_18T_ms__or2_8	0.00582	0.00564	20.69323
sky130_osu_sc_18T_ms__or2_l	0.00455	0.00431	2.02745

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	0.15976	0.27016
sky130_osu_sc_18T_ms__or2_2	0.00000	0.22746	0.53906
sky130_osu_sc_18T_ms__or2_4	0.00000	0.36285	1.07686
sky130_osu_sc_18T_ms__or2_8	0.00000	0.63365	2.15245
sky130_osu_sc_18T_ms__or2_l	0.00000	0.10493	0.17124

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__or2_1	A->Y (RR)	0.06621	0.56341	6.73568
	B->Y (RR)	0.05721	0.52914	6.71113
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.07357	0.50923	6.72669
	B->Y (RR)	0.06430	0.47967	6.68791
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.09568	0.51568	6.99113
	B->Y (RR)	0.08616	0.49134	6.94050
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.13682	0.57168	7.38122
	B->Y (RR)	0.12712	0.55387	7.31848
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.07284	0.63088	6.69796
	B->Y (RR)	0.06425	0.59932	6.65144

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__or2_1	A->Y (FF)	0.10175	0.63308	7.17585
	B->Y (FF)	0.08356	0.60423	7.16157
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.12026	0.60631	7.16521
	B->Y (FF)	0.10215	0.58291	7.11595
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.16741	0.64518	7.41832
	B->Y (FF)	0.14941	0.63085	7.33709
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.26552	0.75414	7.65906
	B->Y (FF)	0.24757	0.74701	7.56011
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.11225	0.68747	6.94159
	B->Y (FF)	0.09441	0.66503	6.97311

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00846	0.00837	0.03361
	B	0.00000	0.00000	0.00000
	B	0.00604	0.00789	0.04405
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01467	0.01493	0.04083
	B	0.00000	0.00000	0.00000
	B	0.01217	0.01339	0.04931
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02811	0.02949	0.05458
	B	0.00000	0.00000	0.00000
	B	0.02554	0.02775	0.06118
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.05653	0.05769	0.08734
	B	0.00000	0.00000	0.00000
	B	0.05380	0.05711	0.09036
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00624	0.00609	0.02489
	B	0.00000	0.00000	0.00000
	B	0.00467	0.00523	0.03129

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.01808	0.01841	0.04445
	B	0.00000	0.00000	0.00000
	B	0.01481	0.01755	0.06860
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.02223	0.02308	0.04886
	B	0.00000	0.00000	0.00000
	B	0.01901	0.02207	0.07149
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.03366	0.03451	0.05952
	B	0.00000	0.00000	0.00000
	B	0.03042	0.03333	0.07995
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.06209	0.05678	0.08135
	B	0.00000	0.00000	0.00000
	B	0.05844	0.05512	0.09943
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01374	0.01381	0.03180
	B	0.00000	0.00000	0.00000
	B	0.01149	0.01314	0.04674

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00436	-0.00522	-0.00520
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00435	-0.00522	-0.00520
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00435	-0.00522	-0.00520
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00435	-0.00522	-0.00520
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00315	-0.00370	-0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00523	0.00521
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00522	0.00521
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00523	0.00521
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00523	0.00521
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00367	0.00370	0.00370

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00244
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00244
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00244
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00244
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00183	-0.00185	-0.00184

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00257	0.00257	0.00248
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00257	0.00257	0.00248
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00257	0.00257	0.00248
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00257	0.00258	0.00248
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00193	0.00193	0.00187

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tbufi_1	12.45420
sky130_osu_sc_18T_ms__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ms__tbufi_1	0.00579	0.00733	1.55627
sky130_osu_sc_18T_ms__tbufi_l	0.00450	0.00572	1.06184

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	0.13519	0.53780
sky130_osu_sc_18T_ms__tbufi_l	0.00000	0.08568	0.34147

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tbufi_1	A->Y (FR)	0.03855	0.79495	10.45650
	OE->Y (FR)	0.04584	0.37662	5.09397
	OE->Y (RR)	0.07408	0.64172	6.82885
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.04613	0.88671	10.54890
	OE->Y (FR)	0.04917	0.37640	5.09375
	OE->Y (RR)	0.08178	0.73230	6.82514

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tbufi_1	A->Y (RF)	0.03097	0.62616	8.23161
	OE->Y (FF)	0.04632	0.37663	5.09397
	OE->Y (RF)	0.02982	0.59873	7.81362
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.03548	0.67475	8.10772
	OE->Y (FF)	0.04967	0.37639	5.09375
	OE->Y (RF)	0.03475	0.64755	7.67138

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00783	0.00872	0.01877
	OE	0.00000	0.00000	0.00000
	OE	0.00795	0.00912	0.06054
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00601	0.00642	0.01274
	OE	0.00000	0.00000	0.00000
	OE	0.00569	0.00647	0.04285

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00146	-0.00123	0.00226
	OE	0.00000	0.00000	0.00000
	OE	0.00521	0.00650	0.06639
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00097	-0.00085	0.00194
	OE	0.00000	0.00000	0.00000
	OE	0.00365	0.00447	0.04389

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00401	-0.00408	-0.00402
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00349	-0.00356	-0.00351
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00307	-0.00310	-0.00308
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00273	-0.00278	-0.00274

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00401	0.00408	0.00402
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00358	0.00361	0.00355
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00307	0.00310	0.00308
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00279	0.00281	0.00277

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00310	0.00477	0.06552
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00274	0.00461	0.06513
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00213	0.00319	0.04320
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00187	0.00309	0.04289

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00915	0.01167	0.07325
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00908	0.01178	0.07339
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00719	0.00862	0.04910
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00718	0.00872	0.04921

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tnbufi_1	12.45420
sky130_osu_sc_18T_ms__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ms__tnbufi_1	0.00578	0.00908	1.55605
sky130_osu_sc_18T_ms__tnbufi_l	0.00449	0.00682	1.06063

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	0.22461	0.26953
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	0.14251	0.17099

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tnbufi_1	A->Y (FR)	0.03875	0.79492	10.45550
	OE->Y (RR)	0.02904	0.37778	5.09511
	OE->Y (FR)	0.05098	0.80738	10.40210
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.04645	0.88628	10.54110
	OE->Y (RR)	0.03055	0.37805	5.09555
	OE->Y (FR)	0.05721	0.88787	10.33460

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tnbufi_1	A->Y (RF)	0.03056	0.62599	8.23080
	OE->Y (RF)	0.02880	0.37777	5.09512
	OE->Y (FF)	0.05201	0.50906	5.47613
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.03498	0.67429	8.10165
	OE->Y (RF)	0.03037	0.37805	5.09521
	OE->Y (FF)	0.05924	0.57006	5.38777

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00802	0.00890	0.01894
	OE	0.00000	0.00000	0.00000
	OE	0.01984	0.02340	0.08579
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00620	0.00660	0.01293
	OE	0.00000	0.00000	0.00000
	OE	0.01480	0.01689	0.05812

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00172	-0.00147	0.00203
	OE	0.00000	0.00000	0.00000
	OE	0.01740	0.02097	0.07632
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00122	-0.00108	0.00170
	OE	0.00000	0.00000	0.00000
	OE	0.01299	0.01515	0.05043

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00345	-0.00351	-0.00347
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00298	-0.00304	-0.00299
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00255	-0.00257	-0.00256
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00224	-0.00228	-0.00225

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00345	0.00351	0.00347
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00306	0.00308	0.00303
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00255	0.00257	0.00256
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00229	0.00230	0.00227

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00619	-0.00490	0.05693
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00624	-0.00514	0.05698
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00440	-0.00364	0.03708
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00442	-0.00373	0.03711

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01496	0.01900	0.08132
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01473	0.01879	0.08114
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01122	0.01353	0.05475
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01106	0.01345	0.05456

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xnor2_l	0.01143	0.01047	1.58937

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	0.45187	0.80733

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xnor2_l	A->Y (RR)	B	0.09366	0.68149	7.00328
	A->Y (FR)	!B	0.05042	0.81092	10.53600
	B->Y (RR)	A	0.07463	0.66107	7.04773
	B->Y (FR)	!A	0.07080	0.82852	10.50900

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xnor2_l	A->Y (FF)	B	0.09233	0.60334	5.97780
	A->Y (RF)	!B	0.04542	0.63184	8.15358
	B->Y (FF)	A	0.07990	0.59265	5.98392
	B->Y (RF)	!A	0.05749	0.64637	8.15441

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00783	0.00864	0.05818
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01931	0.02230	0.09182
	B	A	0.00000	0.00000	0.00000
	B	A	0.00232	0.00382	0.06380
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02152	0.02419	0.08737

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02412	0.02579	0.08531
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00504	0.00592	0.06637
	B	A	0.00000	0.00000	0.00000
	B	A	0.02179	0.02496	0.08646
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00675	0.00746	0.06759

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__xor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xor2_l	0.01143	0.01052	1.59474

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	0.45187	0.72699

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xor2_l	A->Y (RR)	!B	0.08935	0.67129	7.09651
	A->Y (FR)	B	0.06332	0.82713	10.62710
	B->Y (RR)	!A	0.07714	0.66643	7.11944
	B->Y (FR)	A	0.06898	0.83262	10.60370

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xor2_l	A->Y (FF)	!B	0.07908	0.58042	5.71676
	A->Y (RF)	B	0.04415	0.65079	8.34115
	B->Y (FF)	!A	0.07400	0.57656	5.81019
	B->Y (RF)	A	0.05356	0.62985	7.94984

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02272	0.02577	0.09149
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00382	0.00370	0.06265
	B	A	0.00000	0.00000	0.00000
	B	A	0.02349	0.02655	0.09112
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00201	0.00328	0.06385

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00439	0.00505	0.06851
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02447	0.02751	0.08233
	B	A	0.00000	0.00000	0.00000
	B	A	0.00445	0.00511	0.06641
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02211	0.02553	0.08753

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_tt_1P80_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__ant	6.59340
sky130_osu_sc_18T_ms__tiehi	6.59340
sky130_osu_sc_18T_ms__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_ms__ant	0.91722
sky130_osu_sc_18T_ms__tiehi	0.00000
sky130_osu_sc_18T_ms__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__ant	0.00000	408733.00000	817467.00000
sky130_osu_sc_18T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_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_18T_ms__ant	0.00000	0.00000	0.00000
	-0.00189	0.11477	1.51342

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__ant	0.00000	0.00000	0.00000
	7.11162	6.73561	1.82472