sky130_osu_sc_18T_ms_tt_1P50_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_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.02019	0.02024	0.01542	2.14648	0.97975	2.11175
sky130_osu_sc_18T_ms__addf_l	0.02018	0.02023	0.01544	1.48250	0.98382	1.49352

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	0.21136	0.28283
sky130_osu_sc_18T_ms__addf_l	0.00000	0.18699	0.25846

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)	0.19423	2.09723	28.43850
	B->CO (RR)	0.17038	1.99493	27.17840
	CI->CO (RR)	0.18456	2.11495	28.80660
	CON->CO (FR)	0.03460	0.84698	11.64130
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.19631	1.95920	23.29010
	B->CO (RR)	0.17307	1.87075	22.40400
	CI->CO (RR)	0.18662	1.97678	23.67350
	CON->CO (FR)	0.03977	0.92762	11.74570

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)	0.26766	2.66110	35.82680
	B->CO (FF)	0.24221	2.55367	34.46060
	CI->CO (FF)	0.23550	2.60494	35.58890
	CON->CO (RF)	0.03057	0.74505	10.21200
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.26211	2.38434	28.02520
	B->CO (FF)	0.23805	2.29479	27.06460
	CI->CO (FF)	0.23027	2.32918	27.81660
	CON->CO (RF)	0.03308	0.77414	9.80082

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)	0.18782	1.15262	11.60110
	B->CON (FR)	0.16262	1.09282	11.23670
	CI->CON (FR)	0.15594	1.09886	11.42170
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.17888	1.14516	11.61940
	B->CON (FR)	0.15438	1.08587	11.25150
	CI->CON (FR)	0.14692	1.09143	11.44160

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)	0.11948	0.80987	8.36490
	B->CON (RF)	0.11267	0.78854	8.29352
	CI->CON (RF)	0.10998	0.83006	8.79362
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.11510	0.80644	8.37935
	B->CON (RF)	0.10866	0.78558	8.30610
	CI->CON (RF)	0.10554	0.82630	8.80789

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)	0.38470	2.45853	27.70830
	B->S (-R)	0.39607	2.44738	27.04760
	CI->S (-R)	0.35001	2.39581	27.46310
	CON->S (RR)	0.10748	0.80891	8.05282
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.36923	2.27043	23.13680
	B->S (-R)	0.38100	2.26901	22.75090
	CI->S (-R)	0.33462	2.20886	22.90780
	CON->S (RR)	0.10802	0.86616	8.02141

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)	0.32336	1.96528	21.28780
	B->S (-F)	0.31919	1.87786	20.43410
	CI->S (-F)	0.31250	1.97820	21.64360
	CON->S (FF)	0.13263	0.83321	7.54360
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.30809	1.80176	17.71590
	B->S (-F)	0.30355	1.72842	17.13510
	CI->S (-F)	0.29700	1.81500	18.08950
	CON->S (FF)	0.12865	0.85091	7.24423

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	0.00289	0.00303	0.00577
	B	0.00446	0.00443	0.00642
	CI	0.00451	0.00472	0.00746
sky130_osu_sc_18T_ms__addf_l	A	0.00282	0.00256	0.00375
	B	0.00377	0.00363	0.00485
	CI	0.00382	0.00393	0.00565

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01170	0.01187	0.01560
	B	0.01241	0.01266	0.01551
	CI	0.01088	0.01134	0.01425
sky130_osu_sc_18T_ms__addf_l	A	0.01102	0.01113	0.01357
	B	0.01173	0.01190	0.01359
	CI	0.01019	0.01058	0.01246

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01253	0.01252	0.01335
	B	0.01238	0.01256	0.01340
	CI	0.01086	0.01125	0.01229
sky130_osu_sc_18T_ms__addf_l	A	0.01186	0.01181	0.01266
	B	0.01171	0.01184	0.01269
	CI	0.01017	0.01054	0.01159

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00345	0.00328	0.00395
	B	0.00440	0.00429	0.00509
	CI	0.00449	0.00461	0.00572
sky130_osu_sc_18T_ms__addf_l	A	0.00278	0.00254	0.00321
	B	0.00372	0.00355	0.00432
	CI	0.00381	0.00387	0.00495

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01170	0.01187	0.01551
	B	0.01240	0.01265	0.01543
	CI	0.01088	0.01133	0.01420
sky130_osu_sc_18T_ms__addf_l	A	0.01187	0.01186	0.01358
	B	0.01172	0.01190	0.01363
	CI	0.01019	0.01058	0.01246

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.02621	0.02646	0.02751
	B	0.02348	0.02314	0.02796
	CI	0.02130	0.02131	0.02274
sky130_osu_sc_18T_ms__addf_l	A	0.02529	0.02534	0.02643
	B	0.02258	0.02215	0.02705
	CI	0.02040	0.02034	0.02171

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00997	0.01085	2.11383	1.03057	2.14311
sky130_osu_sc_18T_ms__addh_l	0.00997	0.01085	1.27678	1.03358	1.29128

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	0.24451	0.28245
sky130_osu_sc_18T_ms__addh_l	0.00000	0.16558	0.21920

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)	0.13107	0.82694	7.85505
	B->CO (RR)	0.13619	0.83073	7.97954
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.13057	0.90413	7.73804
	B->CO (RR)	0.13577	0.90879	7.86174

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)	0.11089	0.79309	7.43951
	B->CO (FF)	0.11777	0.80603	7.47486
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.11013	0.83382	7.05822
	B->CO (FF)	0.11682	0.84762	7.09570

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	0.17514	0.69986	4.39044
	A->CON (FR)	!B	0.10560	1.02648	11.26060
	B->CON (RR)	A	0.18024	0.70308	4.51224
	B->CON (FR)	!A	0.13046	1.07580	11.53060
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.15741	0.67132	4.30039
	A->CON (FR)	!B	0.09423	1.01553	11.26490
	B->CON (RR)	A	0.16242	0.67547	4.41721
	B->CON (FR)	!A	0.11906	1.06564	11.53850

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	0.16987	0.86265	6.37626
	A->CON (RF)	!B	0.07170	0.78216	8.78568
	B->CON (FF)	A	0.16928	0.89887	6.74238
	B->CON (RF)	!A	0.08450	0.77187	8.47502
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.15429	0.82496	6.16902
	A->CON (RF)	!B	0.06613	0.77538	8.79306
	B->CON (FF)	A	0.15345	0.86264	6.53909
	B->CON (RF)	!A	0.07914	0.76687	8.48201

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	0.13791	2.01081	28.05320
	A->S (FR)	B	0.23607	2.06716	25.35680
	B->S (RR)	!A	0.15019	1.94715	26.82610
	B->S (FR)	A	0.23652	2.15617	26.61890
	CON->S (FR)	-	0.03828	0.86931	11.93090
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.13612	1.81846	21.44790
	A->S (FR)	B	0.22454	1.85448	18.66400
	B->S (RR)	!A	0.14887	1.77504	20.67050
	B->S (FR)	A	0.22462	1.92573	19.48960
	CON->S (FR)	-	0.04385	0.96704	11.84670

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	0.17102	2.39630	33.51200
	A->S (RF)	B	0.22696	1.63755	19.07690
	B->S (FF)	!A	0.19599	2.45390	33.84090
	B->S (RF)	A	0.23195	1.64183	19.20180
	CON->S (RF)	-	0.02874	0.72593	9.94982
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.16400	2.07978	24.40160
	A->S (RF)	B	0.21206	1.46666	13.89370
	B->S (FF)	!A	0.18896	2.13394	24.68830
	B->S (RF)	A	0.21715	1.46837	14.01160
	CON->S (RF)	-	0.03290	0.78365	9.66041

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	0.00546	0.00517	0.00540
	B	0.00000	0.00000	0.00000
	B	0.00494	0.00467	0.00461
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00448	0.00413	0.00530
	B	0.00000	0.00000	0.00000
	B	0.00397	0.00363	0.00448

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	0.00862	0.00829	0.00978
	B	0.00000	0.00000	0.00000
	B	0.00890	0.00899	0.01055
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00763	0.00727	0.00896
	B	0.00000	0.00000	0.00000
	B	0.00792	0.00793	0.00965

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	0.00545	0.00518	0.00596
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00744	0.00749	0.00753
	B	A	0.00000	0.00000	0.00000
	B	A	0.00494	0.00469	0.00516
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00829	0.00817	0.00827
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00448	0.00412	0.00507
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00680	0.00680	0.00668
	B	A	0.00000	0.00000	0.00000
	B	A	0.00397	0.00362	0.00440
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00765	0.00753	0.00756

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	0.00861	0.00830	0.00995
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00123	0.00120	0.00132
	B	A	0.00000	0.00000	0.00000
	B	A	0.00889	0.00898	0.01053
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00213	0.00202	0.00216
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00763	0.00727	0.00891
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00035	0.00036
	B	A	0.00000	0.00000	0.00000
	B	A	0.00792	0.00793	0.00966
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00130	0.00116	0.00117

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	0.00862	0.00831	0.00989
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00125	0.00127	0.00148
	B	A	0.00000	0.00000	0.00000
	B	A	0.00890	0.00900	0.01073
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00215	0.00208	0.00222
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00764	0.00729	0.00877
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00041	0.00036	0.00044
	B	A	0.00000	0.00000	0.00000
	B	A	0.00793	0.00795	0.00961
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00132	0.00119	0.00121

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	0.00546	0.00517	0.00553
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00745	0.00756	0.00776
	B	A	0.00000	0.00000	0.00000
	B	A	0.00494	0.00468	0.00459
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00830	0.00833	0.00837
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00448	0.00414	0.00502
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00680	0.00682	0.00705
	B	A	0.00000	0.00000	0.00000
	B	A	0.00397	0.00363	0.00431
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00765	0.00760	0.00764

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00534	0.00544	2.14351
sky130_osu_sc_18T_ms__and2_2	0.00534	0.00544	4.18276
sky130_osu_sc_18T_ms__and2_4	0.00534	0.00545	8.02801
sky130_osu_sc_18T_ms__and2_6	0.00538	0.00544	11.66763
sky130_osu_sc_18T_ms__and2_8	0.00536	0.00546	15.00840
sky130_osu_sc_18T_ms__and2_l	0.00416	0.00426	1.48189

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	0.11766	0.18816
sky130_osu_sc_18T_ms__and2_2	0.00000	0.18817	0.18857
sky130_osu_sc_18T_ms__and2_4	0.00000	0.32919	0.37592
sky130_osu_sc_18T_ms__and2_6	0.00000	0.47021	0.56368
sky130_osu_sc_18T_ms__and2_8	0.00000	0.61123	0.75144
sky130_osu_sc_18T_ms__and2_l	0.00000	0.08733	0.13967

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)	0.09943	0.74944	7.54980
	B->Y (RR)	0.10587	0.76309	7.65552
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.11615	0.70610	7.77651
	B->Y (RR)	0.12269	0.71189	7.87703
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.16114	0.73887	8.24046
	B->Y (RR)	0.16761	0.73350	8.32385
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.20435	0.78670	8.52261
	B->Y (RR)	0.21071	0.77425	8.59430
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.24696	0.83730	8.79829
	B->Y (RR)	0.25340	0.82391	8.85608
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.11129	0.83509	7.60881
	B->Y (RR)	0.11823	0.84744	7.72177

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)	0.08503	0.70938	6.91224
	B->Y (FF)	0.08986	0.72454	6.97927
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.09809	0.68014	7.09452
	B->Y (FF)	0.10370	0.69291	7.16218
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.13655	0.71140	7.50139
	B->Y (FF)	0.14217	0.72188	7.57181
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.17768	0.75666	7.75277
	B->Y (FF)	0.18315	0.76509	7.81365
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.21577	0.79757	7.87352
	B->Y (FF)	0.22153	0.80499	7.92534
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.09305	0.77043	6.82414
	B->Y (FF)	0.09912	0.78914	6.90859

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	0.00423	0.00378	0.00817
	B	0.00000	0.00000	0.00000
	B	0.00430	0.00405	0.00622
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00835	0.00814	0.01252
	B	0.00000	0.00000	0.00000
	B	0.00841	0.00816	0.01053
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01724	0.01766	0.02094
	B	0.00000	0.00000	0.00000
	B	0.01732	0.01775	0.01923
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.02613	0.02716	0.03023
	B	0.00000	0.00000	0.00000
	B	0.02622	0.02708	0.02879
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.03519	0.03605	0.04042
	B	0.00000	0.00000	0.00000
	B	0.03521	0.03640	0.03990
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00313	0.00278	0.00594
	B	0.00000	0.00000	0.00000
	B	0.00321	0.00270	0.00453

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	0.01035	0.01041	0.01632
	B	0.00000	0.00000	0.00000
	B	0.01165	0.01175	0.01711
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01302	0.01369	0.01932
	B	0.00000	0.00000	0.00000
	B	0.01436	0.01494	0.02014
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01963	0.02151	0.02725
	B	0.00000	0.00000	0.00000
	B	0.02096	0.02247	0.02775
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.02627	0.02925	0.03535
	B	0.00000	0.00000	0.00000
	B	0.02764	0.03014	0.03553
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.03280	0.03671	0.04316
	B	0.00000	0.00000	0.00000
	B	0.03433	0.03740	0.04310
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00806	0.00803	0.01177
	B	0.00000	0.00000	0.00000
	B	0.00903	0.00904	0.01243

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)	-0.00384	-0.00387	-0.00387
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00384	-0.00387	-0.00387
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00384	-0.00387	-0.00387
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00385	-0.00389	-0.00389
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00383	-0.00386	-0.00387
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00284	-0.00288	-0.00288

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)	0.00387	0.00391	0.00389
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00387	0.00391	0.00389
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00387	0.00391	0.00389
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00389	0.00393	0.00391
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00387	0.00391	0.00389
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00287	0.00290	0.00289

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)	-0.00363	-0.00366	-0.00364
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00363	-0.00365	-0.00364
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00363	-0.00366	-0.00364
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00363	-0.00365	-0.00364
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00363	-0.00365	-0.00364
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00270	-0.00272	-0.00271

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)	0.00366	0.00367	0.00365
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00366	0.00367	0.00365
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00366	0.00367	0.00366
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00366	0.00367	0.00366
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00367	0.00367	0.00366
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00272	0.00273	0.00272

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00506	0.00527	0.00510	0.97083

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	0.04406	0.09388

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)	0.10261	1.06492	11.48380
	A1->Y (FR)	0.08829	1.01905	11.13750
	B0->Y (FR)	0.07464	1.01563	11.28580

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)	0.06554	0.72329	7.93791
	A1->Y (RF)	0.05941	0.72970	8.21923
	B0->Y (RF)	0.03844	0.68608	7.98372

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	0.00907	0.00890	0.00904
	A1	0.00000	0.00000	0.00000
	A1	0.00766	0.00756	0.00761
	B0	0.00714	0.00704	0.00600

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	0.00205	0.00175	0.00175
	A1	0.00000	0.00000	0.00000
	A1	0.00208	0.00177	0.00184
	B0	-0.00090	-0.00096	-0.00087

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)	-0.00304	-0.00337	-0.00338
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00343	-0.00345	-0.00344
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00343	-0.00345	-0.00344

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)	0.00336	0.00337	0.00338
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00344	0.00348	0.00345
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00346	0.00347	0.00345

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)	-0.00301	-0.00333	-0.00334
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00339	-0.00340	-0.00340
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00366	-0.00367	-0.00370

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)	0.00332	0.00333	0.00334
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00339	0.00345	0.00341
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00370	0.00373	0.00371

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)	-0.00172	-0.00174	-0.00173

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)	0.00192	0.00193	0.00178

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_18T_ms__aoi22_1	0.00506	0.00527	0.00544	0.00520	0.93578

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__aoi22_1	0.00000	0.04862	0.18776

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)	0.13024	1.09904	11.42290
	A1->Y (FR)	0.11630	1.06522	11.24850
	B0->Y (FR)	0.07848	1.00589	11.06780
	B1->Y (FR)	0.09265	1.03740	11.27980

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)	0.08519	0.73672	7.80917
	A1->Y (RF)	0.07910	0.74448	8.09579
	B0->Y (RF)	0.04478	0.70571	8.06134
	B1->Y (RF)	0.05104	0.69748	7.77458

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	0.01113	0.01101	0.01106
	A1	0.00962	0.00950	0.00962
	B0	0.00765	0.00751	0.00820
	B1	0.00898	0.00862	0.00876

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00416	0.00384	0.00380
	A1	0.00419	0.00386	0.00389
	B0	-0.00056	-0.00064	-0.00052
	B1	-0.00047	-0.00063	-0.00055

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)	-0.00307	-0.00336	-0.00338
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00342	-0.00345	-0.00344
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00342	-0.00345	-0.00344
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00342	-0.00345	-0.00344

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)	0.00335	0.00336	0.00338
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00344	0.00348	0.00345
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00346	0.00347	0.00345
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00346	0.00346	0.00345

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)	-0.00305	-0.00334	-0.00334
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00339	-0.00341	-0.00340
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00365	-0.00367	-0.00370
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00366	-0.00366	-0.00370

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)	0.00331	0.00336	0.00334
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00339	0.00345	0.00341
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00369	0.00373	0.00371
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00369	0.00373	0.00371

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)	-0.00173	-0.00175	-0.00174
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00172	-0.00174	-0.00173
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00376	-0.00378	-0.00379
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00376	-0.00378	-0.00379

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)	0.00201	0.00202	0.00181
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00173	0.00175	0.00173
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00379	0.00385	0.00380
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00379	0.00385	0.00380

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)	-0.00174	-0.00176	-0.00175
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00174	-0.00175	-0.00174
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00348	-0.00350	-0.00349
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00348	-0.00350	-0.00349

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)	0.00202	0.00203	0.00182
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00174	0.00175	0.00174
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00351	0.00351	0.00350
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00351	0.00351	0.00350

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00545	2.11538
sky130_osu_sc_18T_ms__buf_2	0.00545	4.19204
sky130_osu_sc_18T_ms__buf_4	0.00545	8.02496
sky130_osu_sc_18T_ms__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00545	15.41269
sky130_osu_sc_18T_ms__buf_l	0.00431	1.48872

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	0.09429	0.09429
sky130_osu_sc_18T_ms__buf_2	0.00000	0.14143	0.18816
sky130_osu_sc_18T_ms__buf_4	0.00000	0.23571	0.37592
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	0.42428	0.75144
sky130_osu_sc_18T_ms__buf_l	0.00000	0.06992	0.06992

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)**	0.07410	0.70736	7.39631
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.08335	0.65485	7.66706
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.11295	0.66222	8.03606
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.16951	0.73162	8.61682
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.08344	0.79291	7.52657

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)**	0.08101	0.69202	6.79681
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.09496	0.67334	7.09475
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.13358	0.70576	7.48381
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.21288	0.79642	7.99916
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.09006	0.76386	6.81137

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	0.00394	0.00340	0.00687
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00807	0.00790	0.01150
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01697	0.01725	0.02066
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.03464	0.03606	0.03904
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00301	0.00256	0.00514

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	0.01001	0.01000	0.01579
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01268	0.01326	0.01874
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01930	0.02091	0.02635
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.03254	0.03591	0.04203
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00787	0.00784	0.01150

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
	-0.00053	-0.00054	-0.00053

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
	0.00053	0.00054	0.00053

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00520	0.00518	0.01515	2.07542	2.08181
sky130_osu_sc_18T_ms__dffr_l	0.00520	0.00518	0.01515	1.48005	1.47974

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	0.29679	0.44972
sky130_osu_sc_18T_ms__dffr_l	0.00000	0.27242	0.42535

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)	0.39154	1.71310	17.61530
	QN->Q (FR)	0.03985	0.93485	12.78330
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.38539	1.83315	17.29480
	QN->Q (FR)	0.04326	0.99130	12.56310

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)	0.38379	1.77318	18.75910
	QN->Q (RF)	0.03520	0.84359	11.50380
	RN->Q (FF)	0.27923	1.74998	19.47870
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.38990	1.92780	18.54450
	QN->Q (RF)	0.03633	0.85536	10.84850
	RN->Q (FF)	0.28590	1.90294	19.25990

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)	0.33501	1.00540	7.81589
	RN->QN (FR)	0.23033	0.98151	8.53540
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.33561	1.06959	7.83731
	RN->QN (FR)	0.23131	1.04574	8.54771

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)**	0.33347	0.93401	6.55520
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.32127	0.94764	6.26316

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)	-0.08184	-0.11520	-0.50783
	setup	CK (R)	0.31087	0.33664	1.39628
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.08178	-0.11533	-0.50559
	setup	CK (R)	0.31023	0.33779	1.41657

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)	-0.15046	-0.46877	-3.65052
	setup	CK (R)	0.18746	0.48691	3.69431
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.15243	-0.46936	-3.64981
	setup	CK (R)	0.18752	0.48678	3.69437

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)	-0.08184	-0.11520	-0.50783
	setup	CK (R)	0.31087	0.33664	1.39628
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.08178	-0.11533	-0.50559
	setup	CK (R)	0.31023	0.33779	1.41657

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)	-0.15046	-0.46877	-3.65052
	setup	CK (R)	0.18746	0.48691	3.69431
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.15243	-0.46936	-3.64981
	setup	CK (R)	0.18752	0.48678	3.69437

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)	0.25227	0.28086	1.30941
	removal	CK (R)	-0.04356	-0.04947	-0.13306
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.25303	0.28132	1.32143
	removal	CK (R)	-0.04356	-0.04947	-0.13306

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)	0.25227	0.28086	1.30941
	removal	CK (R)	-0.04356	-0.04947	-0.13306
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.25303	0.28132	1.32143
	removal	CK (R)	-0.04356	-0.04947	-0.13306

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 ()	0.16566	0.55176	13.33370
	min_pulse_width	RN ()	0.16566	0.55176	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.16359	0.55176	13.33370
	min_pulse_width	RN ()	0.16153	0.55176	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 ()	0.17598	0.55176	13.33370
	min_pulse_width	CK ()	0.20902	0.55176	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.16566	0.55176	13.33370
	min_pulse_width	CK ()	0.20282	0.55176	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 ()	0.38865	0.55176	13.33370
	min_pulse_width	CK ()	0.15533	0.55176	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.38865	0.55176	13.33370
	min_pulse_width	CK ()	0.15533	0.55176	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	0.01025	0.00756	0.00000
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00915	0.00713	-0.00222

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	0.01144	0.00983	0.00000
	RN	-0.00137	-0.07848	-1.16742
	RN	0.02630	0.02486	0.00996
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01033	0.00917	0.00222
	RN	-0.00137	-0.06407	-0.83253
	RN	0.02517	0.02418	0.01775

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	0.01144	0.00984	0.00000
	RN	-0.00137	-0.07863	-1.17093
	RN	0.02629	0.02485	0.01016
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01032	0.00916	0.00226
	RN	-0.00137	-0.06407	-0.83233
	RN	0.02517	0.02418	0.01770

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	0.01020	0.00755	0.00000
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00910	0.00712	-0.00226

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	-0.00287	-0.00333	-0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01231	0.01161	0.01283
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00555	0.00493	0.00635
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00288	-0.00333	-0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01231	0.01161	0.01283
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00555	0.00493	0.00635

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	0.00334	0.00340	0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02041	0.02008	0.02169
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00956	0.00929	0.01093
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00334	0.00340	0.00337
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02041	0.02008	0.02169
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00956	0.00929	0.01093

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)	0.00400	0.00341	0.00740
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01097	0.01012	0.01387
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)	0.00400	0.00341	0.00740
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01097	0.01012	0.01387

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)	0.00926	0.00897	0.01490
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01972	0.01904	0.02460
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)	0.00926	0.00897	0.01490
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01972	0.01904	0.02460

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)	-0.00059	-0.00137	0.00245
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00587	0.00451	0.00809
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00188	0.00203
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00059	-0.00137	0.00245
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00587	0.00451	0.00809
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00104	-0.00188	0.00203

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)	0.01453	0.01429	0.02018
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03131	0.03012	0.03523
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02389	0.02319	0.02842
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03092	0.03024	0.04153
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01633	0.01612	0.02173
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01453	0.01429	0.02018
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03131	0.03012	0.03523
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02389	0.02319	0.02842
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03092	0.03024	0.04153
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01633	0.01612	0.02173

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00516	0.00519	0.01115	0.01543	2.18634	2.15942
sky130_osu_sc_18T_ms__dffsr_l	0.00516	0.00519	0.01114	0.01543	1.49556	1.48315

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffsr_1	0.00000	0.32351	0.45010
sky130_osu_sc_18T_ms__dffsr_l	0.00000	0.29914	0.42573

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)	0.39769	1.71388	17.78490
	QN->Q (FR)	0.03796	0.91702	12.71000
	RN->Q (RR)	0.31707	1.64725	17.81290
	SN->Q (FR)	0.29285	1.72601	19.11470
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.40250	1.86838	17.53600
	QN->Q (FR)	0.04319	0.99220	12.60760
	RN->Q (RR)	0.32251	1.80232	17.56280
	SN->Q (FR)	0.29806	1.87821	18.84580

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)	0.43545	1.81901	19.01150
	QN->Q (RF)	0.03217	0.80391	11.07310
	RN->Q (FF)	0.28752	1.75600	19.74110
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.44684	1.99609	18.78100
	QN->Q (RF)	0.03626	0.85723	10.89830
	RN->Q (FF)	0.29896	1.93058	19.50360

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)	0.38756	1.05966	7.90393
	RN->QN (FR)	0.24057	0.99522	8.63271
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.39133	1.13164	7.91594
	RN->QN (FR)	0.24454	1.06734	8.63633

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)	0.34358	0.94180	6.53804
	RN->QN (RF)	0.26330	0.87545	6.56926
	SN->QN (FF)	0.23922	0.95379	7.86539
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.34000	0.97673	6.36337
	RN->QN (RF)	0.26019	0.91134	6.39149
	SN->QN (FF)	0.23586	0.98691	7.66135

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)	-0.08834	-0.12549	-0.58174
	setup	CK (R)	0.30282	0.32611	1.41264
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.08814	-0.12473	-0.58036
	setup	CK (R)	0.30271	0.32482	1.41645

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)	-0.17002	-0.49093	-3.81740
	setup	CK (R)	0.21936	0.50671	3.84542
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.17253	-0.49271	-3.81796
	setup	CK (R)	0.21918	0.50671	3.84403

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)	-0.08834	-0.12549	-0.58174
	setup	CK (R)	0.30282	0.32611	1.41264
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.08814	-0.12473	-0.58036
	setup	CK (R)	0.30271	0.32482	1.41645

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)	-0.17002	-0.49093	-3.81740
	setup	CK (R)	0.21936	0.50671	3.84542
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.17253	-0.49271	-3.81796
	setup	CK (R)	0.21918	0.50671	3.84403

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)	0.22320	0.24451	1.23049
	removal	CK (R)	-0.02527	-0.03106	-0.09276
	hold	SN (R)	-0.22864	-0.48593	-2.69058
	setup	SN (R)	0.25612	0.54375	4.93421
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.22378	0.24381	1.22958
	removal	CK (R)	-0.02439	-0.02851	-0.09532
	hold	SN (R)	-0.22387	-0.47847	-2.62384
	setup	SN (R)	0.25622	0.53551	4.83600

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)	0.22320	0.24451	1.23049
	removal	CK (R)	-0.02527	-0.03106	-0.09276
	hold	SN (R)	-0.22864	-0.48593	-2.69058
	hold	SN (R)	-0.22952	-0.48796	-2.69820
	setup	SN (R)	0.25612	0.54082	4.77568
	setup	SN (R)	0.25132	0.54375	4.93421
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.22378	0.24381	1.22958
	removal	CK (R)	-0.02439	-0.02851	-0.09532
	hold	SN (R)	-0.22876	-0.47847	-2.62384
	hold	SN (R)	-0.22387	-0.47995	-2.63980
	setup	SN (R)	0.25622	0.53186	4.65208
	setup	SN (R)	0.24005	0.53551	4.83600

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 ()	0.18630	0.55176	13.33370
	min_pulse_width	RN ()	0.18837	0.55176	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.18630	0.55176	13.33370
	min_pulse_width	RN ()	0.18218	0.55176	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)	0.05639	0.09976	3.04491
	removal	CK (R)	-0.01737	-0.07152	-0.50897
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.05493	0.09950	2.91549
	removal	CK (R)	-0.01737	-0.07152	-0.51191

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)	0.05639	0.09976	3.04491
	removal	CK (R)	-0.01737	-0.07152	-0.50897
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.05493	0.09950	2.91549
	removal	CK (R)	-0.01737	-0.07152	-0.51191

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 ()	0.23173	0.55176	13.33370
	min_pulse_width	SN ()	0.22966	0.55176	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.22966	0.55176	13.33370
	min_pulse_width	SN ()	0.21934	0.55176	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 ()	0.18218	0.55176	13.33370
	min_pulse_width	CK ()	0.22347	0.55176	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.17598	0.55176	13.33370
	min_pulse_width	CK ()	0.22140	0.55176	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 ()	0.38245	0.55176	13.33370
	min_pulse_width	CK ()	0.19250	0.55176	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.38039	0.55176	13.33370
	min_pulse_width	CK ()	0.19043	0.55176	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	0.01269	0.01074	0.00000
	RN	0.02317	0.02153	0.00190
	SN	-0.00137	-0.08098	-1.22982
	SN	0.02562	0.02398	0.00362
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01168	0.00972	-0.00364
	RN	0.02215	0.02047	0.00513
	SN	-0.00137	-0.06448	-0.84125
	SN	0.02461	0.02294	0.00739

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	0.01331	0.01199	0.00000
	RN	-0.00137	-0.08098	-1.22981
	RN	0.02701	0.02567	0.01332
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01230	0.01124	0.00443
	RN	-0.00137	-0.06448	-0.84125
	RN	0.02599	0.02490	0.01880

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	0.01330	0.01198	0.00000
	RN	-0.00137	-0.08038	-1.21464
	RN	0.02700	0.02566	0.01352
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01229	0.01124	0.00452
	RN	-0.00137	-0.06416	-0.83425
	RN	0.02597	0.02488	0.01881

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	0.01263	0.01072	0.00000
	RN	0.02311	0.02149	0.00232
	SN	-0.00137	-0.08038	-1.21463
	SN	0.02557	0.02394	0.00432
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01163	0.00967	-0.00326
	RN	0.02210	0.02042	0.00565
	SN	-0.00137	-0.06416	-0.83423
	SN	0.02455	0.02289	0.00747

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	-0.00328	-0.00335	-0.00336
	(!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)	0.01562	0.01497	0.01620
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00618	0.00557	0.00692
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00616	0.00555	0.00692
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00622	0.00561	0.00696
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00328	-0.00335	-0.00336
	(!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)	0.01562	0.01497	0.01621
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00618	0.00557	0.00692
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00616	0.00555	0.00692
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00622	0.00561	0.00696

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	0.00335	0.00335	0.00336
	(!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)	0.02325	0.02292	0.02418
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01003	0.00983	0.01146
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01013	0.00988	0.01148
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00999	0.00979	0.01142
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00335	0.00335	0.00336
	(!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)	0.02324	0.02292	0.02417
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01002	0.00982	0.01145
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01012	0.00987	0.01148
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00998	0.00978	0.01141

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)	0.00347	0.00281	0.00666
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01309	0.01217	0.01586
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)	0.00347	0.00282	0.00667
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01310	0.01214	0.01587

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)	0.00985	0.00967	0.01574
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02073	0.02000	0.02560
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)	0.00984	0.00966	0.01573
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02072	0.01999	0.02559

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)	-0.00762	-0.00763	-0.00769
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00730	-0.00787	-0.00789
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00730	-0.00761	-0.00758
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00529	0.00468	0.00637
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)	-0.00762	-0.00764	-0.00769
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00729	-0.00786	-0.00787
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00729	-0.00760	-0.00757
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00530	0.00468	0.00637

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)	0.00769	0.00776	0.00772
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00785	0.00798	0.00790
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00755	0.00764	0.00760
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01594	0.01557	0.01684
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)	0.00769	0.00776	0.00772
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00783	0.00796	0.00789
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00755	0.00764	0.00760
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01593	0.01557	0.01683

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)	-0.00059	-0.00137	0.00245
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00662	0.00528	0.00892
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00650	0.00516	0.00882
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00086	-0.00170	0.00221
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00464	0.00310	0.01118
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00059	-0.00137	0.00245
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00662	0.00528	0.00892
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00649	0.00515	0.00881
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00087	-0.00170	0.00221
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00464	0.00310	0.01118

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)	0.03481	0.03367	0.03874
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01457	0.01441	0.02022
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02429	0.02366	0.02893
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02435	0.02375	0.02890
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03373	0.03295	0.04390
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01619	0.01598	0.02159
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01925	0.01883	0.03029
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03481	0.03367	0.03872
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01457	0.01441	0.02022
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02429	0.02366	0.02893
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02435	0.02375	0.02890
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03373	0.03294	0.04390
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01619	0.01598	0.02159
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01924	0.01881	0.03029

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00519	0.00894	0.01522	2.10752	2.08706
sky130_osu_sc_18T_ms__dffs_l	0.00519	0.00894	0.01522	1.48141	1.49243

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	0.30461	0.46836
sky130_osu_sc_18T_ms__dffs_l	0.00000	0.28024	0.44399

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)	0.28804	1.60287	17.68000
	QN->Q (FR)	0.03965	0.93291	12.80420
	SN->Q (FR)	0.21864	1.66986	18.82020
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.28926	1.72401	17.15150
	QN->Q (FR)	0.04308	0.98752	12.50170
	SN->Q (FR)	0.21887	1.78481	18.25210

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)	0.42891	1.83204	19.00500
	QN->Q (RF)	0.03491	0.84435	11.55550
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.43268	1.97176	18.55160
	QN->Q (RF)	0.03611	0.85216	10.81790

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)	0.37766	1.05508	7.84259
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.37617	1.11757	7.91189

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)	0.23603	0.81797	6.43215
	SN->QN (FF)	0.16603	0.88585	7.56030
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.23104	0.84358	6.18621
	SN->QN (FF)	0.16023	0.90489	7.28227

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)	-0.06480	-0.09869	-0.45463
	setup	CK (R)	0.20702	0.24494	1.35528
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.06538	-0.09884	-0.45361
	setup	CK (R)	0.20550	0.24162	1.36140

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)	-0.15366	-0.47519	-3.67808
	setup	CK (R)	0.21198	0.49103	3.72455
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.15696	-0.47575	-3.67872
	setup	CK (R)	0.21171	0.49103	3.72347

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)	-0.06480	-0.09869	-0.45463
	setup	CK (R)	0.20702	0.24494	1.35528
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.06538	-0.09884	-0.45361
	setup	CK (R)	0.20550	0.24162	1.36140

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)	-0.15366	-0.47519	-3.67808
	setup	CK (R)	0.21198	0.49103	3.72455
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.15696	-0.47575	-3.67872
	setup	CK (R)	0.21171	0.49103	3.72347

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)	0.06283	0.10073	2.30349
	removal	CK (R)	-0.01991	-0.06411	-0.47383
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.06283	0.10050	2.18098
	removal	CK (R)	-0.01991	-0.06411	-0.47383

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)	0.06283	0.10073	2.30349
	removal	CK (R)	-0.01991	-0.06411	-0.47383
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.06283	0.10050	2.18098
	removal	CK (R)	-0.01991	-0.06411	-0.47383

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 ()	0.14501	0.55176	13.33370
	min_pulse_width	SN ()	0.14708	0.55176	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.14295	0.55176	13.33370
	min_pulse_width	SN ()	0.14088	0.55176	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 ()	0.12436	0.55176	13.33370
	min_pulse_width	CK ()	0.21934	0.55176	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.12023	0.55176	13.33370
	min_pulse_width	CK ()	0.21315	0.55176	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 ()	0.28335	0.55176	13.33370
	min_pulse_width	CK ()	0.18424	0.55176	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.28335	0.55176	13.33370
	min_pulse_width	CK ()	0.18424	0.55176	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	0.01027	0.00757	0.00000
	SN	-0.00137	-0.07921	-1.18548
	SN	0.02197	0.01936	-0.00795
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00916	0.00712	-0.00268
	SN	-0.00137	-0.06411	-0.83329
	SN	0.02085	0.01898	0.00548

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	0.01136	0.00986	0.00000
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01025	0.00916	0.00268

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	0.01135	0.00989	0.00000
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01025	0.00918	0.00266

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	0.01023	0.00754	0.00000
	SN	-0.00137	-0.07875	-1.17390
	SN	0.02193	0.01935	-0.00722
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00912	0.00710	-0.00266
	SN	-0.00137	-0.06440	-0.83945
	SN	0.02081	0.01892	0.00564

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	-0.00332	-0.00339	-0.00339
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01186	0.01112	0.01235
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00540	0.00479	0.00617
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00332	-0.00339	-0.00339
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01186	0.01112	0.01235
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00540	0.00479	0.00617

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	0.00339	0.00339	0.00339
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01974	0.01936	0.02089
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00963	0.00941	0.01110
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00339	0.00339	0.00339
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01974	0.01936	0.02089
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00963	0.00938	0.01110

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)	-0.00571	-0.00575	-0.00575
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00413	0.00361	0.00576
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)	-0.00571	-0.00575	-0.00575
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00413	0.00361	0.00576

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)	0.00574	0.00583	0.00576
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01124	0.01084	0.01399
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)	0.00574	0.00583	0.00576
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01124	0.01084	0.01399

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)	-0.00061	-0.00139	0.00244
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00096	-0.00180	0.00212
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00383	0.00229	0.01061
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00061	-0.00139	0.00244
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00096	-0.00180	0.00212
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00383	0.00229	0.01061

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)	0.03093	0.02981	0.03492
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01454	0.01428	0.02019
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03018	0.02937	0.04064
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01624	0.01594	0.02165
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01878	0.01838	0.03003
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03093	0.02981	0.03492
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01454	0.01428	0.02019
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03018	0.02937	0.04064
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01624	0.01594	0.02165
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01878	0.01834	0.02998

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00534	0.01506	2.16024	2.17418
sky130_osu_sc_18T_ms__dff_l	0.00534	0.01505	1.46979	1.47031

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	0.29656	0.37711
sky130_osu_sc_18T_ms__dff_l	0.00000	0.27219	0.35274

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)	0.25613	1.54044	17.32380
	QN->Q (FR)	0.03769	0.90939	12.56410
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.26610	1.70458	17.10260
	QN->Q (FR)	0.04385	0.99903	12.63380

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)	0.35986	1.72426	18.65550
	QN->Q (RF)	0.03201	0.79788	10.96780
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.37377	1.91192	18.50970
	QN->Q (RF)	0.03618	0.85103	10.77240

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)	0.31414	0.97763	7.83255
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.31982	1.05570	7.84237

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)	0.20791	0.78071	6.34507
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.20874	0.81971	6.09581

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)	-0.05991	-0.09590	-0.47364
	setup	CK (R)	0.17396	0.21062	1.37122
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.05991	-0.09492	-0.47502
	setup	CK (R)	0.17259	0.20891	1.37283

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)	-0.14390	-0.47244	-3.69724
	setup	CK (R)	0.17693	0.48870	3.73649
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.14545	-0.47244	-3.69608
	setup	CK (R)	0.17294	0.48870	3.73630

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 ()	0.11404	0.55176	13.33370
	min_pulse_width	CK ()	0.19869	0.55176	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.11198	0.55176	13.33370
	min_pulse_width	CK ()	0.19456	0.55176	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 ()**	0.25031	0.55176	13.33370
	min_pulse_width	**CK ()**	0.13882	0.55176	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.25031	0.55176	13.33370
	min_pulse_width	**CK ()**	0.13882	0.55176	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	0.01080	0.00876	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00978	0.00772	-0.00202

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	0.01159	0.01027	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01060	0.00943	0.00202

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	0.01159	0.01027	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01059	0.00943	0.00208

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	0.01075	0.00871	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00974	0.00769	-0.00208

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	-0.00287	-0.00332	-0.00337
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01117	0.01049	0.01180
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00287	-0.00332	-0.00337
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01118	0.01050	0.01181

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	0.00334	0.00339	0.00337
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02034	0.01993	0.02151
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00333	0.00339	0.00337
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02035	0.01992	0.02151

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)	-0.00061	-0.00139	0.00245
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00178	0.00214
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00061	-0.00139	0.00245
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00095	-0.00178	0.00214

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)	0.01449	0.01433	0.02014
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03029	0.02920	0.03439
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03063	0.02980	0.04111
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01617	0.01587	0.02158
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01449	0.01433	0.02014
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03030	0.02921	0.03439
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03063	0.02981	0.04112
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01617	0.01587	0.02158

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00523	2.06291
sky130_osu_sc_18T_ms__inv_10	0.04924	18.41177
sky130_osu_sc_18T_ms__inv_2	0.01004	4.05119
sky130_osu_sc_18T_ms__inv_3	0.01497	5.81438
sky130_osu_sc_18T_ms__inv_4	0.01981	7.81575
sky130_osu_sc_18T_ms__inv_6	0.02970	11.68181
sky130_osu_sc_18T_ms__inv_8	0.03947	15.21290
sky130_osu_sc_18T_ms__inv_l	0.00406	1.43128

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	0.04714	0.09388
sky130_osu_sc_18T_ms__inv_10	0.00000	0.47142	0.93880
sky130_osu_sc_18T_ms__inv_2	0.00000	0.09428	0.18776
sky130_osu_sc_18T_ms__inv_3	0.00000	0.14143	0.28164
sky130_osu_sc_18T_ms__inv_4	0.00000	0.18857	0.37552
sky130_osu_sc_18T_ms__inv_6	0.00000	0.28285	0.56328
sky130_osu_sc_18T_ms__inv_8	0.00000	0.37713	0.75104
sky130_osu_sc_18T_ms__inv_l	0.00000	0.03496	0.06976

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)**	0.03577	0.84075	11.45290
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.05437	0.60056	11.44400
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.02964	0.73301	11.41160
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.03287	0.69183	11.42530
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.03412	0.66253	11.41020
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.03898	0.63069	11.52260
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.04618	0.61050	11.46640
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.04092	0.92203	11.58740

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)**	0.02883	0.71169	9.70441
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.04656	0.49625	9.49002
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.02438	0.62789	9.64671
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.02668	0.59244	9.66693
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.02698	0.56210	9.65797
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.03367	0.53153	9.71850
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.04005	0.51201	9.64023
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.03236	0.76094	9.60365

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	0.00522	0.00526	0.00581
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.04514	0.04557	0.05334
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00938	0.00965	0.01085
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.01435	0.01495	0.01631
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01852	0.01902	0.02123
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.02743	0.02853	0.03211
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.03631	0.03836	0.04268
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00406	0.00406	0.00442

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	-0.00106	-0.00105	-0.00089
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	-0.01873	-0.01768	-0.01368
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00347	-0.00330	-0.00287
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00464	-0.00446	-0.00365
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00718	-0.00682	-0.00560
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	-0.01095	-0.01030	-0.00837
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01492	-0.01411	-0.01110
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00077	-0.00078	-0.00067

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.28996	0.28987	0.01062	0.28568

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	0.09444	0.09444

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)	-	0.02254	0.39442	3.87565
	A1->Y (RR)	-	0.02383	0.39538	3.88008
	S0->Y (RR)	(!A0 * A1)	0.06423	0.37816	1.56828
	S0->Y (FR)	(A0 * !A1)	0.05101	0.48501	3.61567

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)	-	0.01975	0.36107	3.45383
	A1->Y (FF)	-	0.01901	0.35931	3.44654
	S0->Y (FF)	(!A0 * A1)	0.08210	0.44249	2.23033
	S0->Y (RF)	(A0 * !A1)	0.03373	0.40456	2.93556

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	-	-0.00551	-0.00551	-0.00552
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00387	-0.00388	-0.00388
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00617	0.00606	0.01256
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00367	-0.00429	0.00042

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	-	0.00551	0.00551	0.00552
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00387	0.00388	0.00388
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00117	0.00058	0.00556
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01400	0.01383	0.01999

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)	-0.00144	-0.00144	-0.00144

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)	0.00145	0.00144	0.00144

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)	-0.00170	-0.00170	-0.00170

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)	0.00170	0.00170	0.00170

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)	-0.00129	-0.00185	0.00301
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00124	-0.00188	0.00307

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)	0.01054	0.01043	0.01658
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00963	0.00958	0.01601

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00524	0.00520	1.78322
sky130_osu_sc_18T_ms__nand2_l	0.00407	0.00404	1.24027

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	0.04715	0.18776
sky130_osu_sc_18T_ms__nand2_l	0.00000	0.03497	0.13951

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)	0.03664	0.81065	10.64900
	B->Y (FR)	0.04297	0.80647	10.55210
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.04163	0.88483	10.75810
	B->Y (FR)	0.04921	0.88852	10.72180

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)	0.04233	0.86856	11.49240
	B->Y (RF)	0.04841	0.85879	11.26420
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.04822	0.94553	11.42980
	B->Y (RF)	0.05406	0.93996	11.19690

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	0.00555	0.00558	0.00619
	B	0.00000	0.00000	0.00000
	B	0.00697	0.00632	0.00754
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00428	0.00427	0.00462
	B	0.00000	0.00000	0.00000
	B	0.00531	0.00526	0.00558

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	-0.00067	-0.00074	-0.00058
	B	0.00000	0.00000	0.00000
	B	-0.00062	-0.00072	-0.00062
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00053	-0.00060	-0.00048
	B	0.00000	0.00000	0.00000
	B	-0.00050	-0.00057	-0.00051

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)	-0.00378	-0.00380	-0.00381
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00278	-0.00280	-0.00281

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)	0.00380	0.00384	0.00382
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00280	0.00283	0.00281

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)	-0.00351	-0.00354	-0.00352
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00259	-0.00261	-0.00259

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)	0.00354	0.00354	0.00353
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00260	0.00261	0.00260

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00524	0.00555	1.03916
sky130_osu_sc_18T_ms__nor2_l	0.00399	0.00433	0.71982

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	0.03296	0.09388
sky130_osu_sc_18T_ms__nor2_l	0.00000	0.02600	0.06976

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)	0.07752	1.02626	11.52360
	B->Y (FR)	0.05946	0.98098	11.25560
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.08747	1.12601	11.50350
	B->Y (FR)	0.07159	1.09002	11.39830

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)	0.03824	0.60664	7.04316
	B->Y (RF)	0.03052	0.59448	7.02289
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.04127	0.63956	6.96457
	B->Y (RF)	0.03410	0.62834	6.94675

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	0.00742	0.00735	0.00742
	B	0.00000	0.00000	0.00000
	B	0.00571	0.00567	0.00601
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00547	0.00539	0.00546
	B	0.00000	0.00000	0.00000
	B	0.00437	0.00412	0.00474

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	0.00088	0.00062	0.00075
	B	0.00000	0.00000	0.00000
	B	-0.00085	-0.00084	-0.00072
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00057	0.00040	0.00052
	B	0.00000	0.00000	0.00000
	B	-0.00057	-0.00059	-0.00050

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)	-0.00289	-0.00335	-0.00338
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00210	-0.00240	-0.00242

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)	0.00336	0.00341	0.00338
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00240	0.00242	0.00242

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)	-0.00173	-0.00174	-0.00173
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00128	-0.00129	-0.00129

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)	0.00183	0.00185	0.00177
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00135	0.00136	0.00131

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00528	0.00534	0.00451	1.03120

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	0.04279	0.16364

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)	0.07983	1.00576	11.27330
	A1->Y (FR)	0.10244	1.05507	11.55740
	B0->Y (FR)	0.05098	0.83564	9.70810

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)	0.06008	0.76123	8.54973
	A1->Y (RF)	0.07143	0.75640	8.35785
	B0->Y (RF)	0.04694	0.77331	8.97525

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	0.00770	0.00759	0.00666
	A1	0.00000	0.00000	0.00000
	A1	0.00943	0.00927	0.00935
	B0	0.00645	0.00636	0.00689

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	0.00033	0.00020	0.00024
	A1	0.00000	0.00000	0.00000
	A1	0.00202	0.00174	0.00179
	B0	0.00266	0.00255	0.00264

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)	-0.00173	-0.00175	-0.00174
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00332	-0.00339	-0.00338
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00345	-0.00347	-0.00345

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)	0.00184	0.00185	0.00177
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00337	0.00339	0.00338
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00345	0.00351	0.00346

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)	-0.00285	-0.00330	-0.00333
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00329	-0.00337	-0.00336
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00341	-0.00342	-0.00342

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)	0.00330	0.00332	0.00333
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00334	0.00338	0.00336
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00342	0.00348	0.00343

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)	-0.00283	-0.00285	-0.00289

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)	0.00289	0.00292	0.00290

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00512	0.00539	0.00554	0.00542	1.06327

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	0.04943	0.18776

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)	0.11146	1.07254	11.73800
	A1->Y (FR)	0.09318	1.02583	11.47720
	B0->Y (FR)	0.06658	0.99900	11.46470
	B1->Y (FR)	0.08549	1.04574	11.72490

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)	0.10086	0.82954	8.87860
	A1->Y (RF)	0.08088	0.79777	8.75486
	B0->Y (RF)	0.06769	0.80716	9.15231
	B1->Y (RF)	0.08922	0.84562	9.38814

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	0.01224	0.01208	0.01220
	A1	0.01049	0.01036	0.01097
	B0	0.00785	0.00780	0.00842
	B1	0.00967	0.00956	0.00967

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00324	0.00296	0.00297
	A1	0.00167	0.00147	0.00148
	B0	0.00164	0.00151	0.00156
	B1	0.00325	0.00295	0.00305

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)	-0.00289	-0.00335	-0.00338
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00289	-0.00335	-0.00338
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00330	-0.00337	-0.00337
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00342	-0.00343	-0.00343

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)	0.00335	0.00341	0.00338
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00335	0.00341	0.00338
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00334	0.00337	0.00337
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00342	0.00346	0.00344

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)	-0.00172	-0.00174	-0.00173
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00172	-0.00173	-0.00172
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00329	-0.00336	-0.00335
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00341	-0.00343	-0.00342

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)	0.00182	0.00184	0.00176
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00182	0.00184	0.00176
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00333	0.00336	0.00335
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00341	0.00348	0.00343

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)	-0.00171	-0.00173	-0.00172
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00171	-0.00173	-0.00171
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00365	-0.00373	-0.00371
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00368	-0.00370	-0.00377

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)	0.00181	0.00183	0.00175
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00182	0.00183	0.00175
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00370	0.00373	0.00371
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00378	0.00381	0.00379

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)	-0.00285	-0.00330	-0.00333
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00285	-0.00330	-0.00333
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00370	-0.00377	-0.00378
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00372	-0.00376	-0.00382

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)	0.00331	0.00337	0.00333
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00331	0.00334	0.00333
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00376	0.00377	0.00378
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00382	0.00386	0.00384

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00558	0.00537	2.13603
sky130_osu_sc_18T_ms__or2_2	0.00558	0.00537	4.15117
sky130_osu_sc_18T_ms__or2_4	0.00558	0.00537	7.95544
sky130_osu_sc_18T_ms__or2_8	0.00557	0.00538	15.09731
sky130_osu_sc_18T_ms__or2_l	0.00440	0.00415	1.45312

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	0.05674	0.09469
sky130_osu_sc_18T_ms__or2_2	0.00000	0.08051	0.18857
sky130_osu_sc_18T_ms__or2_4	0.00000	0.12806	0.37633
sky130_osu_sc_18T_ms__or2_8	0.00000	0.22315	0.75185
sky130_osu_sc_18T_ms__or2_l	0.00000	0.04356	0.07008

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)	0.08647	0.75135	7.61374
	B->Y (RR)	0.07637	0.71535	7.46657
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.09622	0.68839	7.75635
	B->Y (RR)	0.08580	0.65850	7.62357
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.12631	0.69240	8.15081
	B->Y (RR)	0.11561	0.66789	8.04182
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.18269	0.75192	8.70326
	B->Y (RR)	0.17175	0.73415	8.60097
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.09615	0.83154	7.60532
	B->Y (RR)	0.08619	0.79870	7.46252

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)	0.14985	0.82601	7.42452
	B->Y (FF)	0.12567	0.76609	7.01040
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.18117	0.80659	7.63397
	B->Y (FF)	0.15712	0.75626	7.21093
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.25712	0.86995	8.11505
	B->Y (FF)	0.23314	0.82917	7.69304
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.40952	1.03088	8.64401
	B->Y (FF)	0.38560	0.98548	8.27154
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.16611	0.88271	7.21612
	B->Y (FF)	0.14188	0.83305	6.86647

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	0.00590	0.00520	0.00755
	B	0.00000	0.00000	0.00000
	B	0.00426	0.00371	0.00742
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01004	0.00963	0.01225
	B	0.00000	0.00000	0.00000
	B	0.00835	0.00819	0.01206
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01895	0.01926	0.02146
	B	0.00000	0.00000	0.00000
	B	0.01724	0.01786	0.02080
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.03662	0.03798	0.04026
	B	0.00000	0.00000	0.00000
	B	0.03495	0.03682	0.04029
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00438	0.00382	0.00564
	B	0.00000	0.00000	0.00000
	B	0.00328	0.00286	0.00551

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	0.01212	0.01205	0.01365
	B	0.00000	0.00000	0.00000
	B	0.01015	0.01035	0.01604
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01474	0.01530	0.01681
	B	0.00000	0.00000	0.00000
	B	0.01276	0.01354	0.01883
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02129	0.02299	0.02459
	B	0.00000	0.00000	0.00000
	B	0.01932	0.02112	0.02640
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.03479	0.03785	0.04042
	B	0.00000	0.00000	0.00000
	B	0.03281	0.03570	0.04172
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00927	0.00915	0.01028
	B	0.00000	0.00000	0.00000
	B	0.00788	0.00801	0.01163

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)	-0.00291	-0.00337	-0.00339
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00291	-0.00337	-0.00339
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00291	-0.00337	-0.00340
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00291	-0.00337	-0.00340
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00211	-0.00241	-0.00243

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)	0.00337	0.00342	0.00339
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00336	0.00342	0.00339
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00337	0.00342	0.00340
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00337	0.00342	0.00340
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00241	0.00245	0.00243

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)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00173	-0.00175	-0.00174
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00130	-0.00131	-0.00131

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)	0.00185	0.00186	0.00178
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00186	0.00186	0.00178
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00186	0.00186	0.00178
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00186	0.00186	0.00178
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00138	0.00139	0.00133

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00555	0.00703	1.04048
sky130_osu_sc_18T_ms__tbufi_l	0.00434	0.00552	0.71878

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	0.04742	0.18776
sky130_osu_sc_18T_ms__tbufi_l	0.00000	0.03508	0.13951

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)	0.05655	0.97896	11.25910
	OE->Y (FR)	0.05587	0.34953	4.44580
	OE->Y (RR)	0.10366	0.87451	7.50008
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.06855	1.08841	11.40100
	OE->Y (FR)	0.06066	0.34941	4.44564
	OE->Y (RR)	0.11556	0.98826	7.59782

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)	0.04105	0.72364	8.48472
	OE->Y (FF)	0.05676	0.34956	4.44579
	OE->Y (RF)	0.04021	0.70983	8.20833
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.04743	0.77910	8.40896
	OE->Y (FF)	0.06169	0.34943	4.44560
	OE->Y (RF)	0.04689	0.76497	8.12674

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	0.00532	0.00530	0.00557
	OE	0.00000	0.00000	0.00000
	OE	0.00531	0.00482	0.00928
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00410	0.00384	0.00443
	OE	0.00000	0.00000	0.00000
	OE	0.00383	0.00343	0.00661

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	-0.00085	-0.00085	-0.00074
	OE	0.00000	0.00000	0.00000
	OE	0.00368	0.00312	0.00827
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00057	-0.00059	-0.00050
	OE	0.00000	0.00000	0.00000
	OE	0.00258	0.00217	0.00560

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)	-0.00276	-0.00281	-0.00277
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00246	-0.00249	-0.00247
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00212	-0.00216	-0.00213
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00192	-0.00194	-0.00193

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)	0.00276	0.00281	0.00277
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00255	0.00257	0.00252
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00212	0.00216	0.00213
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00198	0.00200	0.00196

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)	0.00213	0.00160	0.00682
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00191	0.00147	0.00654
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00147	0.00117	0.00455
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00131	0.00096	0.00435

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)	0.00619	0.00583	0.01211
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00620	0.00593	0.01222
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00491	0.00456	0.00862
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00493	0.00467	0.00869

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00554	0.00865	1.04054
sky130_osu_sc_18T_ms__tnbufi_l	0.00434	0.00654	0.71885

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	0.07858	0.09429
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	0.05828	0.06992

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)	0.05718	0.97906	11.25800
	OE->Y (RR)	0.03468	0.34981	4.44705
	OE->Y (FR)	0.07274	1.02118	11.52810
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.06928	1.09195	11.40170
	OE->Y (RR)	0.03679	0.35013	4.44729
	OE->Y (FR)	0.08237	1.12200	11.50810

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)	0.04046	0.72478	8.48474
	OE->Y (RF)	0.03452	0.34985	4.44692
	OE->Y (FF)	0.07195	0.65288	5.46199
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.04669	0.77884	8.40909
	OE->Y (RF)	0.03664	0.35014	4.44730
	OE->Y (FF)	0.08218	0.72231	5.42056

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	0.00545	0.00543	0.00556
	OE	0.00000	0.00000	0.00000
	OE	0.01320	0.01331	0.02018
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00424	0.00417	0.00456
	OE	0.00000	0.00000	0.00000
	OE	0.00992	0.00987	0.01437

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	-0.00102	-0.00101	-0.00090
	OE	0.00000	0.00000	0.00000
	OE	0.01179	0.01185	0.01836
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00074	-0.00075	-0.00066
	OE	0.00000	0.00000	0.00000
	OE	0.00884	0.00880	0.01296

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)	-0.00238	-0.00242	-0.00239
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00211	-0.00213	-0.00212
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00176	-0.00179	-0.00177
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00158	-0.00160	-0.00159

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)	0.00238	0.00242	0.00239
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00218	0.00220	0.00216
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00176	0.00179	0.00177
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00163	0.00164	0.00161

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)	-0.00391	-0.00477	0.00077
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00392	-0.00483	0.00081
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00280	-0.00344	0.00024
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00280	-0.00344	0.00027

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)	0.01002	0.01021	0.01696
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00984	0.01001	0.01678
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00756	0.00757	0.01198
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00744	0.00744	0.01186

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.01095	0.00998	1.07485

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	0.15959	0.28205

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	0.13200	0.93168	7.82879
	A->Y (FR)	!B	0.07476	1.00917	11.46070
	B->Y (RR)	A	0.10532	0.90113	7.75935
	B->Y (FR)	!A	0.10055	1.05653	11.73200

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	0.12320	0.77211	6.05210
	A->Y (RF)	!B	0.06071	0.74843	8.53469
	B->Y (FF)	A	0.10879	0.75746	6.04607
	B->Y (RF)	!A	0.07372	0.76536	8.54459

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	0.00521	0.00454	0.00873
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01311	0.01285	0.01986
	B	A	0.00000	0.00000	0.00000
	B	A	0.00191	0.00146	0.00640
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01434	0.01414	0.02063

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	0.01638	0.01574	0.02173
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00365	0.00295	0.00778
	B	A	0.00000	0.00000	0.00000
	B	A	0.01471	0.01477	0.02114
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00491	0.00408	0.00889

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.01095	0.01002	1.05273

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	0.15959	0.25971

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	0.12605	0.90830	7.65913
	A->Y (FR)	B	0.09125	1.04197	11.64400
	B->Y (RR)	!A	0.10836	0.89832	7.66595
	B->Y (FR)	A	0.09890	1.05116	11.63810

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	0.11017	0.74222	5.78997
	A->Y (RF)	B	0.05783	0.75336	8.55060
	B->Y (FF)	!A	0.10246	0.73333	5.79107
	B->Y (RF)	A	0.06842	0.74337	8.27968

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	0.01524	0.01507	0.02166
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00286	0.00160	0.00630
	B	A	0.00000	0.00000	0.00000
	B	A	0.01567	0.01556	0.02210
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00170	0.00118	0.00613

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	0.00338	0.00250	0.00731
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01657	0.01658	0.02260
	B	A	0.00000	0.00000	0.00000
	B	A	0.00340	0.00254	0.00740
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01495	0.01518	0.02153

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.53699
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	200060.00000	400120.00000
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
	-0.00207	0.04880	0.61721

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
	3.48118	3.27749	0.77180