sky130_osu_sc_18T_ms_tt_2P10_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_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.02191	0.02180	0.01659	3.71122	1.75939	3.55529
sky130_osu_sc_18T_ms__addf_l	0.02190	0.02179	0.01658	2.46662	1.76235	2.48437

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	1.55012	2.11919
sky130_osu_sc_18T_ms__addf_l	0.00000	1.23269	1.80176

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)	0.11402	1.48322	25.58220
	B->CO (RR)	0.09618	1.40587	24.30160
	CI->CO (RR)	0.10875	1.53063	26.31340
	CON->CO (FR)	0.02139	0.62095	10.24440
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.11517	1.36769	20.22450
	B->CO (RR)	0.11030	1.31909	19.39860
	CI->CO (RR)	0.10987	1.41652	20.98800
	CON->CO (FR)	0.02411	0.67677	10.16350

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)	0.13960	1.74900	30.07970
	B->CO (FF)	0.12265	1.68636	29.04100
	CI->CO (FF)	0.12077	1.76424	30.52370
	CON->CO (RF)	0.02098	0.59856	10.01330
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.13707	1.56037	22.95470
	B->CO (FF)	0.12039	1.51255	22.40100
	CI->CO (FF)	0.11821	1.57697	23.45000
	CON->CO (RF)	0.02243	0.61690	9.28618

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)	0.10469	0.74989	9.33137
	B->CON (FR)	0.08847	0.73180	9.32961
	CI->CON (FR)	0.08585	0.76876	9.87818
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.09932	0.74501	9.33863
	B->CON (FR)	0.08357	0.72744	9.33473
	CI->CON (FR)	0.08047	0.76398	9.88370

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)	0.07906	0.58901	7.34754
	B->CON (RF)	0.07544	0.59195	7.43696
	CI->CON (RF)	0.07380	0.63923	8.16017
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.07589	0.58612	7.35045
	B->CON (RF)	0.07262	0.59054	7.44184
	CI->CON (RF)	0.07062	0.63642	8.16539

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)	0.20414	1.52712	23.17070
	B->S (-R)	0.21608	1.51129	22.13070
	CI->S (-R)	0.18382	1.53970	23.62840
	CON->S (RR)	0.06425	0.51286	7.03368
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.19589	1.41772	19.06570
	B->S (-R)	0.18369	1.38251	18.43770
	CI->S (-R)	0.17555	1.43207	19.55930
	CON->S (RR)	0.06432	0.55741	7.01203

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)	0.18383	1.38220	20.47730
	B->S (-F)	0.17783	1.32019	19.56710
	CI->S (-F)	0.17786	1.42694	21.21350
	CON->S (FF)	0.07493	0.58750	7.66952
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.17515	1.26803	16.61240
	B->S (-F)	0.16930	1.21786	16.04570
	CI->S (-F)	0.16912	1.31356	17.37390
	CON->S (FF)	0.07298	0.60709	7.30473

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	0.00600	0.01136	0.12658
	B	0.00684	0.01157	0.11191
	CI	0.00982	0.01542	0.13126
sky130_osu_sc_18T_ms__addf_l	A	0.00433	0.00810	0.07911
	B	0.00524	0.00836	0.07145
	CI	0.00815	0.01215	0.08285

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.02519	0.03121	0.17825
	B	0.02650	0.03123	0.16104
	CI	0.02104	0.02770	0.17780
sky130_osu_sc_18T_ms__addf_l	A	0.02354	0.02796	0.12359
	B	0.02482	0.02841	0.11426
	CI	0.01938	0.02455	0.12478

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.02516	0.02885	0.10540
	B	0.02557	0.02904	0.09965
	CI	0.02102	0.02551	0.10752
sky130_osu_sc_18T_ms__addf_l	A	0.02348	0.02709	0.10070
	B	0.02397	0.02729	0.09552
	CI	0.01936	0.02376	0.10267

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00596	0.00959	0.07027
	B	0.00680	0.00968	0.06446
	CI	0.00977	0.01346	0.07555
sky130_osu_sc_18T_ms__addf_l	A	0.00430	0.00748	0.06175
	B	0.00521	0.00767	0.05711
	CI	0.00811	0.01136	0.06704

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.02517	0.03103	0.17127
	B	-0.01041	-0.00655	0.09997
	CI	0.02103	0.02752	0.17117
sky130_osu_sc_18T_ms__addf_l	A	-0.00558	-0.00628	0.12803
	B	-0.01308	-0.00892	0.11217
	CI	0.00613	0.00933	0.13582

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.05642	0.06076	0.17713
	B	0.04971	0.05637	0.20568
	CI	0.04196	0.04669	0.15655
sky130_osu_sc_18T_ms__addf_l	A	0.05429	0.05861	0.18067
	B	0.04764	0.05481	0.20821
	CI	0.03987	0.04447	0.15996

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.01066	0.01171	3.61312	1.88752	3.69375
sky130_osu_sc_18T_ms__addh_l	0.01066	0.01171	2.12747	1.88656	2.16942

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	1.82419	2.11831
sky130_osu_sc_18T_ms__addh_l	0.00000	1.24647	1.65589

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)	0.07430	0.52094	6.88532
	B->CO (RR)	0.07747	0.51423	6.98749
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.07473	0.58454	6.84618
	B->CO (RR)	0.07790	0.57873	6.87278

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)	0.06440	0.54869	7.52810
	B->CO (FF)	0.06994	0.56378	7.59871
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.06464	0.58636	7.00102
	B->CO (FF)	0.06997	0.60123	7.07528

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	0.10262	0.42906	3.72696
	A->CON (FR)	!B	0.05533	0.71444	9.67515
	B->CON (RR)	A	0.10552	0.42211	3.84332
	B->CON (FR)	!A	0.07055	0.70528	9.34305
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.09222	0.41065	3.76012
	A->CON (FR)	!B	0.04921	0.70517	9.66525
	B->CON (RR)	A	0.09512	0.40460	3.80420
	B->CON (FR)	!A	0.06443	0.69849	9.33273

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	0.10200	0.57242	5.95153
	A->CON (RF)	!B	0.04591	0.60739	8.22693
	B->CON (FF)	A	0.09994	0.61111	6.48360
	B->CON (RF)	!A	0.05433	0.58607	7.75480
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.09236	0.54485	5.76544
	A->CON (RF)	!B	0.04230	0.60158	8.21932
	B->CON (FF)	A	0.09042	0.58341	6.29226
	B->CON (RF)	!A	0.05076	0.58207	7.74907

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	0.07855	1.45456	25.47710
	A->S (FR)	B	0.13531	1.40516	22.95410
	B->S (RR)	!A	0.08746	1.39328	24.09260
	B->S (FR)	A	0.13335	1.48444	24.40210
	CON->S (FR)	-	0.02428	0.64369	10.57970
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.07811	1.32065	19.20180
	A->S (FR)	B	0.12902	1.25274	16.59030
	B->S (RR)	!A	0.08722	1.27352	18.30930
	B->S (FR)	A	0.12707	1.31773	17.54120
	CON->S (FR)	-	0.02712	0.71945	10.47120

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	0.08560	1.59906	28.08740
	A->S (RF)	B	0.13010	1.11534	17.49660
	B->S (FF)	!A	0.10082	1.59656	27.84420
	B->S (RF)	A	0.13299	1.10703	17.60490
	CON->S (RF)	-	0.01981	0.57843	9.65795
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.08262	1.41313	20.56850
	A->S (RF)	B	0.12208	1.00299	12.78130
	B->S (FF)	!A	0.09786	1.40787	20.25600
	B->S (RF)	A	0.12500	0.99569	12.80440
	CON->S (RF)	-	0.02221	0.62399	9.15129

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	0.01129	0.01364	0.06272
	B	0.00000	0.00000	0.00000
	B	0.00996	0.01189	0.07857
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00914	0.01129	0.06884
	B	0.00000	0.00000	0.00000
	B	0.00780	0.00982	0.07788

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	0.01766	0.02162	0.11017
	B	0.00000	0.00000	0.00000
	B	0.01833	0.02401	0.12124
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01551	0.01888	0.09210
	B	0.00000	0.00000	0.00000
	B	0.01618	0.02086	0.09861

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	0.01128	0.01342	0.06421
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01562	0.01843	0.05497
	B	A	0.00000	0.00000	0.00000
	B	A	0.00994	0.01197	0.07957
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01773	0.01920	0.04890
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00913	0.01129	0.06889
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01410	0.01618	0.04637
	B	A	0.00000	0.00000	0.00000
	B	A	0.00779	0.00979	0.07809
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01622	0.01722	0.04003

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	0.01766	0.02130	0.10046
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00210	0.00432	0.03615
	B	A	0.00000	0.00000	0.00000
	B	A	0.01832	0.02350	0.10862
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00390	0.00576	0.03566
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01551	0.01885	0.09169
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00028	0.00133	0.02145
	B	A	0.00000	0.00000	0.00000
	B	A	0.01618	0.02081	0.09770
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00206	0.00311	0.02252

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	0.01768	0.02167	0.11220
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00215	0.00472	0.04802
	B	A	0.00000	0.00000	0.00000
	B	A	0.01835	0.02410	0.12347
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00395	0.00623	0.04446
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01553	0.01890	0.09253
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00031	0.00160	0.02142
	B	A	0.00000	0.00000	0.00000
	B	A	0.01619	0.02089	0.09881
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00210	0.00332	0.02246

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	0.01130	0.01337	0.06524
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01564	0.01827	0.05735
	B	A	0.00000	0.00000	0.00000
	B	A	0.00996	0.01194	0.07889
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01778	0.01957	0.05347
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00914	0.01129	0.06890
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01411	0.01629	0.04480
	B	A	0.00000	0.00000	0.00000
	B	A	0.00780	0.00980	0.07815
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01624	0.01741	0.03899

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00576	0.00587	3.64848
sky130_osu_sc_18T_ms__and2_2	0.00576	0.00587	6.94653
sky130_osu_sc_18T_ms__and2_4	0.00577	0.00588	13.13774
sky130_osu_sc_18T_ms__and2_6	0.00581	0.00589	19.27881
sky130_osu_sc_18T_ms__and2_8	0.00579	0.00591	24.57866
sky130_osu_sc_18T_ms__and2_l	0.00443	0.00454	2.45327

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	0.88257	1.41192
sky130_osu_sc_18T_ms__and2_2	0.00000	1.41191	1.41285
sky130_osu_sc_18T_ms__and2_4	0.00000	2.47062	2.82290
sky130_osu_sc_18T_ms__and2_6	0.00000	3.52932	4.23388
sky130_osu_sc_18T_ms__and2_8	0.00000	4.58802	5.64485
sky130_osu_sc_18T_ms__and2_l	0.00000	0.48609	0.77763

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)	0.05699	0.47173	6.92836
	B->Y (RR)	0.06079	0.46261	6.61896
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.06589	0.42922	6.87794
	B->Y (RR)	0.06975	0.41751	6.57160
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.09085	0.44327	7.00630
	B->Y (RR)	0.09476	0.42691	6.70729
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.11654	0.47648	7.16015
	B->Y (RR)	0.12037	0.45555	6.86980
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.14220	0.51337	7.25049
	B->Y (RR)	0.14610	0.48871	6.95201
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.06352	0.53167	6.79795
	B->Y (RR)	0.06763	0.52311	6.52994

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)	0.05103	0.48832	6.97654
	B->Y (FF)	0.05394	0.49948	7.03310
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.05693	0.44046	6.81051
	B->Y (FF)	0.06053	0.45169	6.89565
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.07753	0.44876	6.87660
	B->Y (FF)	0.08112	0.45791	6.96767
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.10104	0.47969	6.97343
	B->Y (FF)	0.10448	0.48752	7.06958
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.12288	0.50782	6.86519
	B->Y (FF)	0.12646	0.51507	6.95822
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.05541	0.53717	6.70619
	B->Y (FF)	0.05916	0.55100	6.79144

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	0.00783	0.01711	0.22540
	B	0.00000	0.00000	0.00000
	B	0.00790	0.01376	0.15781
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01685	0.02528	0.23359
	B	0.00000	0.00000	0.00000
	B	0.01698	0.02270	0.16401
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.03751	0.04472	0.24733
	B	0.00000	0.00000	0.00000
	B	0.03763	0.04259	0.17510
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.06327	0.06626	0.26190
	B	0.00000	0.00000	0.00000
	B	0.06347	0.06495	0.18818
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.09149	0.08942	0.28399
	B	0.00000	0.00000	0.00000
	B	0.09170	0.08751	0.20789
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00575	0.01162	0.15204
	B	0.00000	0.00000	0.00000
	B	0.00585	0.00963	0.11074

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	0.02101	0.03376	0.21424
	B	0.00000	0.00000	0.00000
	B	0.02369	0.03583	0.20828
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.02753	0.04014	0.22131
	B	0.00000	0.00000	0.00000
	B	0.03020	0.04215	0.21575
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.04704	0.05648	0.23681
	B	0.00000	0.00000	0.00000
	B	0.04938	0.05788	0.23052
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.06710	0.07367	0.25332
	B	0.00000	0.00000	0.00000
	B	0.06933	0.07412	0.24594
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.09419	0.09170	0.27080
	B	0.00000	0.00000	0.00000
	B	0.09613	0.09122	0.26047
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01625	0.02417	0.13848
	B	0.00000	0.00000	0.00000
	B	0.01827	0.02589	0.13657

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)	-0.00825	-0.00830	-0.00830
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00824	-0.00830	-0.00829
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00823	-0.00829	-0.00828
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00826	-0.00831	-0.00831
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00821	-0.00826	-0.00826
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00606	-0.00609	-0.00609

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)	0.00829	0.00837	0.00833
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00830	0.00838	0.00834
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00830	0.00839	0.00835
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00835	0.00843	0.00840
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00833	0.00841	0.00838
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00608	0.00613	0.00611

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)	-0.00782	-0.00786	-0.00784
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00782	-0.00786	-0.00784
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00780	-0.00784	-0.00782
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00779	-0.00783	-0.00781
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00778	-0.00781	-0.00780
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00574	-0.00577	-0.00575

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)	0.00791	0.00791	0.00787
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00792	0.00791	0.00788
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00793	0.00792	0.00789
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00795	0.00793	0.00791
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00796	0.00794	0.00792
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00580	0.00579	0.00577

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00550	0.00569	0.00549	1.71595

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	0.32158	0.70549

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)	0.05732	0.69696	9.17268
	A1->Y (FR)	0.04886	0.66208	8.79531
	B0->Y (FR)	0.04093	0.71585	9.68902

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)	0.04296	0.52067	6.77809
	A1->Y (RF)	0.03908	0.55312	7.30312
	B0->Y (RF)	0.02604	0.54572	7.43583

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	0.01958	0.02088	0.05808
	A1	0.00000	0.00000	0.00000
	A1	0.01643	0.01779	0.05399
	B0	0.01138	0.01535	0.06795

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	0.00381	0.00430	0.02678
	A1	0.00000	0.00000	0.00000
	A1	0.00392	0.00506	0.03065
	B0	-0.00234	-0.00053	0.02354

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)	-0.00614	-0.00740	-0.00738
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00744	-0.00748	-0.00744
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00743	-0.00747	-0.00745

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)	0.00732	0.00740	0.00738
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00744	0.00750	0.00747
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00751	0.00749	0.00747

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)	-0.00611	-0.00732	-0.00731
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00735	-0.00740	-0.00736
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00791	-0.00796	-0.00796

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)	0.00725	0.00734	0.00732
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00736	0.00743	0.00739
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00794	0.00802	0.00798

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)	-0.00321	-0.00324	-0.00323

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)	0.00345	0.00347	0.00329

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00550	0.00569	0.00585	0.00562	1.62584

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi22_1	0.00000	0.35291	1.41096

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)	0.07248	0.71118	9.03705
	A1->Y (FR)	0.06429	0.69027	8.84496
	B0->Y (FR)	0.04277	0.70366	9.39630
	B1->Y (FR)	0.05096	0.73425	9.68051

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)	0.05691	0.52593	6.55227
	A1->Y (RF)	0.05304	0.55875	7.07516
	B0->Y (RF)	0.02758	0.52726	7.05281
	B1->Y (RF)	0.03158	0.49529	6.53215

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	0.02422	0.02534	0.06490
	A1	0.02112	0.02220	0.06128
	B0	0.01234	0.01684	0.07799
	B1	0.01545	0.02003	0.07937

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00829	0.00869	0.03301
	A1	0.00841	0.00947	0.03711
	B0	-0.00174	0.00018	0.02738
	B1	-0.00163	-0.00042	0.02334

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)	-0.00609	-0.00738	-0.00738
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00743	-0.00748	-0.00743
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00743	-0.00749	-0.00744
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00743	-0.00747	-0.00744

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)	0.00734	0.00743	0.00739
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00745	0.00750	0.00748
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00751	0.00749	0.00746
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00751	0.00749	0.00746

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)	-0.00606	-0.00729	-0.00730
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00735	-0.00739	-0.00735
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00788	-0.00795	-0.00795
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00789	-0.00796	-0.00796

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)	0.00726	0.00731	0.00732
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00737	0.00744	0.00740
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00794	0.00801	0.00798
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00793	0.00801	0.00798

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)	-0.00323	-0.00325	-0.00324
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00320	-0.00324	-0.00323
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00809	-0.00811	-0.00814
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00809	-0.00813	-0.00815

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)	0.00356	0.00358	0.00332
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00322	0.00325	0.00323
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00812	0.00820	0.00816
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00812	0.00820	0.00816

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)	-0.00325	-0.00328	-0.00326
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00322	-0.00326	-0.00325
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00753	-0.00756	-0.00755
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00753	-0.00757	-0.00755

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)	0.00358	0.00360	0.00334
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00325	0.00326	0.00325
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00761	0.00759	0.00757
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00761	0.00759	0.00757

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00587	3.64289
sky130_osu_sc_18T_ms__buf_2	0.00587	6.92357
sky130_osu_sc_18T_ms__buf_4	0.00587	13.28889
sky130_osu_sc_18T_ms__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00590	25.45117
sky130_osu_sc_18T_ms__buf_l	0.00458	2.46651

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	0.70643	0.70643
sky130_osu_sc_18T_ms__buf_2	0.00000	1.05965	1.41192
sky130_osu_sc_18T_ms__buf_4	0.00000	1.76607	2.82290
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	3.17893	5.64486
sky130_osu_sc_18T_ms__buf_l	0.00000	0.38900	0.38900

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)**	0.04601	0.43889	6.53028
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.05155	0.38857	6.41109
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.06934	0.39306	6.58585
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.10508	0.44694	6.89590
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.05124	0.49673	6.43713

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)**	0.04844	0.48485	7.04954
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.05505	0.43987	6.92118
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.07563	0.44898	7.04823
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.12076	0.51002	7.17176
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.05346	0.53665	6.83705

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	0.00730	0.01561	0.17301
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01598	0.02468	0.18226
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.03534	0.04381	0.19910
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.08155	0.08735	0.22849
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00550	0.01119	0.12567

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	0.01999	0.03324	0.21637
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.02643	0.03940	0.22254
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.04553	0.05535	0.23830
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.09265	0.08964	0.26795
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01564	0.02399	0.14234

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
	-0.00106	-0.00107	-0.00105

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
	0.00106	0.00107	0.00105

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00566	0.00559	0.01597	3.52865	3.49332
sky130_osu_sc_18T_ms__dffr_l	0.00566	0.00559	0.01597	2.49300	2.48167

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	2.11255	3.30905
sky130_osu_sc_18T_ms__dffr_l	0.00000	1.79512	2.99162

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)	0.20759	1.14034	16.15780
	QN->Q (FR)	0.02539	0.70928	11.63840
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.20507	1.23525	15.78140
	QN->Q (FR)	0.02675	0.74452	11.25850

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)	0.21773	1.16632	16.73760
	QN->Q (RF)	0.02446	0.70306	11.59220
	RN->Q (FF)	0.16465	1.17883	17.54940
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.22038	1.27757	16.43400
	QN->Q (RF)	0.02485	0.70479	10.69680
	RN->Q (FF)	0.16759	1.29045	17.23510

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)	0.19106	0.60538	6.52995
	RN->QN (FR)	0.13797	0.61796	7.34188
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.19117	0.65631	6.58370
	RN->QN (FR)	0.13838	0.66885	7.39135

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)**	0.17849	0.59908	6.36537
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.17248	0.61934	6.05136

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)	-0.05474	-0.05675	0.15759
	setup	CK (R)	0.16603	0.19725	3.92414
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.05519	-0.05681	0.15318
	setup	CK (R)	0.16618	0.19773	3.76823

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)	-0.08511	-0.24634	1.20622
	setup	CK (R)	0.10732	0.25477	3.07169
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.08403	-0.24272	1.18929
	setup	CK (R)	0.10721	0.25477	3.07157

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)	-0.05474	-0.05675	0.15759
	setup	CK (R)	0.16603	0.19725	3.92414
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.05519	-0.05681	0.15318
	setup	CK (R)	0.16618	0.19773	3.76823

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)	-0.08511	-0.24634	1.20622
	setup	CK (R)	0.10732	0.25477	3.07169
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.08403	-0.24272	1.18929
	setup	CK (R)	0.10721	0.25477	3.07157

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)	0.13591	0.17411	2.34378
	removal	CK (R)	-0.02676	-0.03375	-0.10114
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.13381	0.17465	2.31426
	removal	CK (R)	-0.02959	-0.03375	-0.10114

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)	0.13591	0.17411	2.34378
	removal	CK (R)	-0.02676	-0.03375	-0.10114
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.13381	0.17465	2.31426
	removal	CK (R)	-0.02959	-0.03375	-0.10114

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 ()	0.09449	0.49927	13.33370
	min_pulse_width	RN ()	0.09824	0.49927	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.09449	0.49927	13.33370
	min_pulse_width	RN ()	0.09449	0.49927	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 ()	0.09824	0.49927	13.33370
	min_pulse_width	CK ()	0.11323	0.49927	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.09074	0.49927	13.33370
	min_pulse_width	CK ()	0.10948	0.49927	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 ()	0.21068	0.49927	13.33370
	min_pulse_width	CK ()	0.08699	0.49927	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.21068	0.49927	13.33370
	min_pulse_width	CK ()	0.08699	0.49927	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	0.02035	0.02099	0.03289
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01795	0.02162	0.10615

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	0.02349	0.02205	0.03974
	RN	-0.00255	-0.20722	-3.89026
	RN	0.05479	0.05549	0.07777
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02113	0.02221	0.09404
	RN	-0.00255	-0.16823	-2.74850
	RN	0.05240	0.05560	0.13337

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	0.02346	0.02208	0.04036
	RN	-0.00255	-0.20597	-3.84894
	RN	0.05475	0.05545	0.07877
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02111	0.02223	0.09371
	RN	-0.00255	-0.16777	-2.73540
	RN	0.05237	0.05562	0.13193

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	0.02027	0.02104	0.03581
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01787	0.02159	0.10420

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	-0.00605	-0.00720	-0.00731
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02566	0.02973	0.17766
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01122	0.01560	0.16151
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00605	-0.00720	-0.00732
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02566	0.02972	0.17765
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01122	0.01560	0.16151

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	0.00733	0.00740	0.00739
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.04349	0.04924	0.20079
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02060	0.02629	0.17408
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00733	0.00740	0.00739
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.04349	0.04923	0.20079
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02059	0.02629	0.17407

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)	0.00751	0.01757	0.25614
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02207	0.03180	0.27818
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)	0.00750	0.01757	0.25613
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02207	0.03180	0.27818

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)	0.01900	0.03297	0.27250
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04120	0.05475	0.30177
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)	0.01900	0.03296	0.27250
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04119	0.05475	0.30176

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)	-0.00211	0.00746	0.24441
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01226	0.02055	0.27136
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00285	0.00697	0.24237
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00211	0.00746	0.24440
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01226	0.02054	0.27135
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00285	0.00697	0.24236

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)	0.02861	0.04268	0.28124
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.06489	0.07650	0.37747
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.04978	0.06178	0.31181
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.06300	0.08753	0.46301
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03354	0.04715	0.28395
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02861	0.04269	0.28124
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.06489	0.07650	0.37746
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.04978	0.06177	0.31181
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.06300	0.08754	0.46301
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03353	0.04715	0.28394

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00562	0.00560	0.01202	0.01626	3.74495	3.70207
sky130_osu_sc_18T_ms__dffsr_l	0.00562	0.00560	0.01200	0.01626	2.50841	2.48645

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffsr_1	0.00000	2.36830	3.30992
sky130_osu_sc_18T_ms__dffsr_l	0.00000	2.05087	2.99249

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)	0.21372	1.13716	16.35900
	QN->Q (FR)	0.02401	0.69083	11.49220
	RN->Q (RR)	0.17272	1.10829	16.46070
	SN->Q (FR)	0.15611	1.15835	17.37530
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.21721	1.25107	15.87270
	QN->Q (FR)	0.02667	0.74348	11.26320
	RN->Q (RR)	0.17632	1.22120	15.95990
	SN->Q (FR)	0.15978	1.26893	16.87800

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)	0.24470	1.18467	16.91720
	QN->Q (RF)	0.02228	0.66061	11.06350
	RN->Q (FF)	0.16244	1.17010	17.72920
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.25103	1.31464	16.55500
	QN->Q (RF)	0.02480	0.70446	10.72480
	RN->Q (FF)	0.17379	1.30644	17.36070

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)	0.21897	0.63436	6.65683
	RN->QN (FR)	0.14221	0.62654	7.46818
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.22152	0.68998	6.62018
	RN->QN (FR)	0.14429	0.68090	7.42765

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)	0.18614	0.60101	6.39410
	RN->QN (RF)	0.14540	0.57254	6.49178
	SN->QN (FF)	0.12883	0.62184	7.40592
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.18521	0.63329	6.07193
	RN->QN (RF)	0.14493	0.60532	6.16718
	SN->QN (FF)	0.12811	0.65154	7.07789

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)	-0.05698	-0.06101	0.12227
	setup	CK (R)	0.16532	0.19811	3.29302
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.05449	-0.06387	0.12447
	setup	CK (R)	0.16560	0.19723	3.05457

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)	-0.09538	-0.25949	1.24397
	setup	CK (R)	0.11966	0.26915	3.10359
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.09324	-0.25783	1.24297
	setup	CK (R)	0.11966	0.26915	3.10290

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)	-0.05698	-0.06101	0.12227
	setup	CK (R)	0.16532	0.19811	3.29302
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.05449	-0.06387	0.12447
	setup	CK (R)	0.16560	0.19723	3.05457

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)	-0.09538	-0.25949	1.24397
	setup	CK (R)	0.11966	0.26915	3.10359
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.09324	-0.25783	1.24297
	setup	CK (R)	0.11966	0.26915	3.10290

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)	0.12152	0.16056	1.94486
	removal	CK (R)	-0.01662	-0.02055	-0.05541
	hold	SN (R)	-0.11958	-0.24244	-1.01401
	setup	SN (R)	0.14203	0.28924	6.09865
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.12089	0.15998	2.02859
	removal	CK (R)	-0.01662	-0.02055	-0.05541
	hold	SN (R)	-0.11745	-0.23628	-0.99008
	setup	SN (R)	0.14173	0.28260	5.99360

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)	0.12152	0.16056	1.94486
	removal	CK (R)	-0.01662	-0.02055	-0.05541
	hold	SN (R)	-0.12055	-0.24244	-1.01694
	hold	SN (R)	-0.11958	-0.24244	-1.01401
	setup	SN (R)	0.14203	0.28758	5.94944
	setup	SN (R)	0.13774	0.28924	6.09865
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.12089	0.15998	2.02859
	removal	CK (R)	-0.01662	-0.02055	-0.05541
	hold	SN (R)	-0.11745	-0.23628	-0.99887
	hold	SN (R)	-0.11768	-0.23628	-0.99008
	setup	SN (R)	0.14173	0.28071	5.91656
	setup	SN (R)	0.13415	0.28260	5.99360

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 ()	0.10948	0.49927	13.33370
	min_pulse_width	RN ()	0.10948	0.49927	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.10948	0.49927	13.33370
	min_pulse_width	RN ()	0.10573	0.49927	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)	0.03564	0.06975	5.71373
	removal	CK (R)	-0.01804	-0.05547	-0.29807
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03439	0.06975	5.48915
	removal	CK (R)	-0.01804	-0.05547	-0.29807

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)	0.03564	0.06975	5.71373
	removal	CK (R)	-0.01804	-0.05547	-0.29807
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03439	0.06975	5.48915
	removal	CK (R)	-0.01804	-0.05547	-0.29807

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 ()	0.12447	0.49927	13.33370
	min_pulse_width	SN ()	0.12073	0.49927	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.12447	0.49927	13.33370
	min_pulse_width	SN ()	0.11698	0.49927	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 ()	0.09824	0.49927	13.33370
	min_pulse_width	CK ()	0.12447	0.49927	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.09449	0.49927	13.33370
	min_pulse_width	CK ()	0.12073	0.49927	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 ()	0.21442	0.49927	13.33370
	min_pulse_width	CK ()	0.10199	0.49927	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.21068	0.49927	13.33370
	min_pulse_width	CK ()	0.10199	0.49927	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	0.02586	0.02904	0.09236
	RN	0.04726	0.04719	0.07875
	SN	-0.00255	-0.21475	-4.12881
	SN	0.04509	0.04371	0.06813
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02363	0.02688	0.11164
	RN	0.04502	0.04482	0.09733
	SN	-0.00255	-0.16885	-2.76552
	SN	0.04286	0.04171	0.08567

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	0.02735	0.02685	0.05775
	RN	-0.00255	-0.21475	-4.12878
	RN	0.05665	0.05802	0.09550
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02512	0.02640	0.09954
	RN	-0.00255	-0.16885	-2.76549
	RN	0.05308	0.05640	0.13794

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	0.02731	0.02686	0.05755
	RN	-0.00255	-0.21327	-4.08034
	RN	0.05527	0.05686	0.09773
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02508	0.02641	0.09944
	RN	-0.00255	-0.16796	-2.74066
	RN	0.05306	0.05642	0.13904

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	0.02577	0.02915	0.09214
	RN	0.04717	0.04713	0.07962
	SN	-0.00255	-0.21327	-4.08118
	SN	0.04501	0.04372	0.06907
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02354	0.02693	0.11008
	RN	0.04493	0.04432	0.09773
	SN	-0.00255	-0.16796	-2.74104
	SN	0.04279	0.04168	0.08679

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	-0.00718	-0.00730	-0.00733
	(!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)	0.03304	0.03696	0.18544
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01273	0.01691	0.16225
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01271	0.01690	0.16225
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01280	0.01698	0.16233
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00718	-0.00730	-0.00733
	(!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)	0.03303	0.03695	0.18544
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01273	0.01690	0.16225
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01271	0.01690	0.16226
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01280	0.01698	0.16233

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	0.00738	0.00736	0.00735
	(!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)	0.04940	0.05462	0.20538
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02147	0.02700	0.17452
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02191	0.02730	0.17452
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02139	0.02692	0.17444
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00738	0.00735	0.00735
	(!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)	0.04938	0.05460	0.20537
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02145	0.02699	0.17451
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02190	0.02728	0.17451
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02138	0.02692	0.17443

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)	0.00556	0.01534	0.25406
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02613	0.03549	0.28484
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)	0.00556	0.01535	0.25407
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02613	0.03550	0.28485

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)	0.02002	0.03449	0.27453
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.04317	0.05682	0.30599
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)	0.02000	0.03447	0.27451
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.04315	0.05680	0.30597

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)	-0.01632	-0.01647	-0.01647
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01460	-0.01692	-0.01687
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01510	-0.01622	-0.01625
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01103	0.01525	0.16368
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)	-0.01638	-0.01647	-0.01647
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01458	-0.01690	-0.01684
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01509	-0.01624	-0.01625
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01103	0.01526	0.16368

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)	0.01647	0.01662	0.01656
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01685	0.01704	0.01699
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01626	0.01649	0.01636
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.03415	0.03811	0.18546
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)	0.01647	0.01662	0.01656
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01682	0.01701	0.01696
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01625	0.01648	0.01635
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.03413	0.03809	0.18545

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)	-0.00210	0.00729	0.24457
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01389	0.02214	0.27216
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01340	0.02177	0.27261
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00249	0.00732	0.24295
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00822	0.02595	0.44525
sky130_osu_sc_18T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00211	0.00729	0.24457
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01388	0.02212	0.27214
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01338	0.02176	0.27260
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00250	0.00732	0.24295
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00821	0.02595	0.44526

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)	0.07271	0.08441	0.38453
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02869	0.04276	0.28154
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.05083	0.06295	0.31174
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.05091	0.06296	0.31229
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.06885	0.09244	0.46966
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.03328	0.04685	0.28390
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03852	0.06270	0.48509
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.07271	0.08441	0.38453
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02869	0.04276	0.28154
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.05083	0.06294	0.31155
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.05091	0.06296	0.31230
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.06883	0.09241	0.46964
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.03327	0.04685	0.28390
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03850	0.06269	0.48507

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00564	0.00949	0.01605	3.55174	3.51544
sky130_osu_sc_18T_ms__dffs_l	0.00564	0.00949	0.01605	2.49090	2.49434

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	2.06429	2.96910
sky130_osu_sc_18T_ms__dffs_l	0.00000	1.74686	2.65167

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)	0.16461	1.08634	16.10740
	QN->Q (FR)	0.02521	0.70578	11.56680
	SN->Q (FR)	0.12617	1.15092	17.13130
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.16507	1.18188	15.63370
	QN->Q (FR)	0.02659	0.73954	11.17040
	SN->Q (FR)	0.12702	1.24259	16.63180

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)	0.23775	1.19236	16.80320
	QN->Q (RF)	0.02426	0.69780	11.58040
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.23938	1.29840	16.39110
	QN->Q (RF)	0.02470	0.70064	10.64660

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)	0.21044	0.63038	6.55370
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.20961	0.67933	6.60953

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)	0.13742	0.54713	6.29882
	SN->QN (FF)	0.09909	0.61112	7.31093
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.13457	0.57208	5.98699
	SN->QN (FF)	0.09657	0.63109	6.98112

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)	-0.04121	-0.04581	0.17228
	setup	CK (R)	0.12172	0.16007	1.81405
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.03818	-0.04587	0.17192
	setup	CK (R)	0.12163	0.16007	1.66991

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)	-0.08481	-0.24255	0.28746
	setup	CK (R)	0.11383	0.25477	3.08477
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.08619	-0.24255	0.23493
	setup	CK (R)	0.11383	0.25477	3.08440

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)	-0.04121	-0.04581	0.17228
	setup	CK (R)	0.12172	0.16007	1.81405
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.03818	-0.04587	0.17192
	setup	CK (R)	0.12163	0.16007	1.66991

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)	-0.08481	-0.24255	0.28746
	setup	CK (R)	0.11383	0.25477	3.08477
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.08619	-0.24255	0.23493
	setup	CK (R)	0.11383	0.25477	3.08440

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)	0.03508	0.06575	4.39640
	removal	CK (R)	-0.01525	-0.05342	-0.36805
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.03479	0.06575	4.23720
	removal	CK (R)	-0.01525	-0.05342	-0.36805

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)	0.03508	0.06575	4.39640
	removal	CK (R)	-0.01525	-0.05342	-0.36805
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.03479	0.06575	4.23720
	removal	CK (R)	-0.01525	-0.05342	-0.36805

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 ()	0.08699	0.49927	13.33370
	min_pulse_width	SN ()	0.08699	0.49927	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.08699	0.49927	13.33370
	min_pulse_width	SN ()	0.07950	0.49927	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 ()	0.07200	0.49927	13.33370
	min_pulse_width	CK ()	0.12073	0.49927	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.07200	0.49927	13.33370
	min_pulse_width	CK ()	0.11698	0.49927	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 ()	0.16570	0.49927	13.33370
	min_pulse_width	CK ()	0.09449	0.49927	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.16570	0.49927	13.33370
	min_pulse_width	CK ()	0.09449	0.49927	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	0.02019	0.02074	0.03684
	SN	-0.00255	-0.20803	-3.91579
	SN	0.03693	0.03471	0.01740
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01785	0.02129	0.10661
	SN	-0.00255	-0.16814	-2.74621
	SN	0.03461	0.03572	0.08470

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	0.02334	0.02227	0.04658
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.02093	0.02230	0.09850

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	0.02332	0.02227	0.04687
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.02090	0.02228	0.09769

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	0.02011	0.02095	0.03766
	SN	-0.00255	-0.20675	-3.87511
	SN	0.03687	0.03485	0.01786
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01778	0.02140	0.10530
	SN	-0.00255	-0.16828	-2.74974
	SN	0.03455	0.03570	0.08381

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	-0.00725	-0.00738	-0.00740
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02433	0.02874	0.18009
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01092	0.01525	0.16148
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00726	-0.00738	-0.00740
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02433	0.02873	0.18009
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01092	0.01525	0.16148

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	0.00746	0.00743	0.00742
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04181	0.04731	0.19907
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02062	0.02639	0.17479
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00746	0.00743	0.00742
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04181	0.04731	0.19906
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02061	0.02639	0.17479

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)	-0.01206	-0.01216	-0.01214
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00864	0.01266	0.15061
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)	-0.01207	-0.01216	-0.01214
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00863	0.01266	0.15061

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)	0.01218	0.01226	0.01220
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.02343	0.02948	0.16995
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)	0.01218	0.01226	0.01220
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.02343	0.02948	0.16995

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)	-0.00215	0.00746	0.24482
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00269	0.00716	0.24304
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00631	0.02472	0.44595
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00215	0.00746	0.24481
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00270	0.00717	0.24304
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00630	0.02472	0.44595

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)	0.06391	0.07573	0.37872
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02861	0.04272	0.28174
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.06112	0.08529	0.46157
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03335	0.04699	0.28426
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.03750	0.06213	0.48629
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.06391	0.07572	0.37872
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02861	0.04273	0.28174
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.06112	0.08530	0.46157
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03335	0.04699	0.28425
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.03750	0.06212	0.48628

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00580	0.01596	3.77216	3.71752
sky130_osu_sc_18T_ms__dff_l	0.00580	0.01596	2.44578	2.44672

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	2.18988	2.82558
sky130_osu_sc_18T_ms__dff_l	0.00000	1.87245	2.50815

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)	0.14684	1.06110	16.32330
	QN->Q (FR)	0.02383	0.68857	11.48200
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.15240	1.16803	15.42350
	QN->Q (FR)	0.02716	0.74969	11.27280

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)	0.20250	1.13917	16.95270
	QN->Q (RF)	0.02217	0.65934	11.07330
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.20992	1.26166	16.22370
	QN->Q (RF)	0.02476	0.69679	10.52310

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)	0.17736	0.58702	6.61453
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.18084	0.64674	6.56389

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)	0.12128	0.52500	6.29692
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.12217	0.55660	5.85779

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)	-0.03525	-0.04315	0.15590
	setup	CK (R)	0.10064	0.14253	1.56261
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.03525	-0.04315	0.15433
	setup	CK (R)	0.10044	0.14119	1.56770

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)	-0.07544	-0.24354	0.19905
	setup	CK (R)	0.09314	0.25271	3.06363
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.07928	-0.24385	0.23475
	setup	CK (R)	0.09302	0.25271	3.06275

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 ()	0.06825	0.49927	13.33370
	min_pulse_width	CK ()	0.10573	0.49927	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.06451	0.49927	13.33370
	min_pulse_width	CK ()	0.10199	0.49927	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 ()**	0.14696	0.49927	13.33370
	min_pulse_width	**CK ()**	0.07200	0.49927	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.14696	0.49927	13.33370
	min_pulse_width	**CK ()**	0.07200	0.49927	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	0.02123	0.02499	0.09384
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01907	0.02295	0.10880

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	0.02376	0.02361	0.05875
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02164	0.02280	0.09364

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	0.02374	0.02366	0.05915
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02162	0.02282	0.09352

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	0.02115	0.02508	0.09425
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01900	0.02290	0.11273

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	-0.00606	-0.00719	-0.00730
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02267	0.02752	0.18163
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00606	-0.00720	-0.00731
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02268	0.02753	0.18163

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	0.00731	0.00738	0.00737
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.04299	0.04897	0.20360
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00731	0.00738	0.00736
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.04300	0.04897	0.20361

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)	-0.00217	0.00747	0.24483
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00267	0.00722	0.24304
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00217	0.00747	0.24482
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00268	0.00721	0.24303

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)	0.02851	0.04265	0.28159
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.06244	0.07446	0.37892
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.06212	0.08689	0.46932
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03323	0.04690	0.28408
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02851	0.04265	0.28159
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.06245	0.07447	0.37891
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.06212	0.08690	0.46925
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03322	0.04689	0.28407

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00564	3.43616
sky130_osu_sc_18T_ms__inv_10	0.05335	29.16083
sky130_osu_sc_18T_ms__inv_2	0.01086	6.57486
sky130_osu_sc_18T_ms__inv_3	0.01620	9.52900
sky130_osu_sc_18T_ms__inv_4	0.02145	12.37740
sky130_osu_sc_18T_ms__inv_6	0.03217	18.35705
sky130_osu_sc_18T_ms__inv_8	0.04277	24.07496
sky130_osu_sc_18T_ms__inv_l	0.00433	2.28831

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	0.35322	0.70549
sky130_osu_sc_18T_ms__inv_10	0.00000	3.53213	7.05489
sky130_osu_sc_18T_ms__inv_2	0.00000	0.70643	1.41098
sky130_osu_sc_18T_ms__inv_3	0.00000	1.05964	2.11647
sky130_osu_sc_18T_ms__inv_4	0.00000	1.41286	2.82196
sky130_osu_sc_18T_ms__inv_6	0.00000	2.11928	4.23294
sky130_osu_sc_18T_ms__inv_8	0.00000	2.82571	5.64392
sky130_osu_sc_18T_ms__inv_l	0.00000	0.19450	0.38863

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)**	0.02226	0.61020	9.85346
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.03755	0.40494	9.69672
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.01901	0.52282	9.69592
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.02146	0.49083	9.81964
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.02257	0.45665	9.59321
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.02631	0.42814	9.67082
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.03149	0.41195	9.68228
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.02502	0.66492	9.79073

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)**	0.01976	0.56225	9.16272
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.03668	0.33982	8.67772
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.01722	0.47057	8.95926
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.01932	0.43630	9.05276
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.01980	0.40155	8.84736
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.02544	0.37192	8.87582
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.03073	0.35322	8.83430
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02188	0.59855	8.83009

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	0.01056	0.01612	0.06654
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.09738	0.17164	0.64412
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01908	0.03111	0.12818
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02921	0.04787	0.19339
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.03785	0.06496	0.26095
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.05659	0.09987	0.38700
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.07612	0.13514	0.52251
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00814	0.01135	0.04403

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	-0.00279	-0.00059	0.02061
sky130_osu_sc_18T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02659	-0.00258	0.20635
sky130_osu_sc_18T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00806	-0.00294	0.03962
sky130_osu_sc_18T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.01066	-0.00154	0.05967
sky130_osu_sc_18T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.01545	-0.00383	0.08088
sky130_osu_sc_18T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.02339	-0.00514	0.12115
sky130_osu_sc_18T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.02793	-0.00299	0.16263
sky130_osu_sc_18T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00200	-0.00053	0.01590

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.01364	0.01343	0.01145	0.00502

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	0.71366	0.73403

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)	-	0.01119	0.02331	0.02853
	A1->Y (RR)	-	0.01196	0.02338	0.02845
	S0->Y (RR)	(!A0 * A1)	0.03852	0.09398	-0.21640
	S0->Y (FR)	(A0 * !A1)	0.03414	0.10988	0.54109

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)	-	0.01002	0.02525	0.02881
	A1->Y (FF)	-	0.01012	0.02519	0.02872
	S0->Y (FF)	(!A0 * A1)	0.04813	0.15623	0.64850
	S0->Y (RF)	(A0 * !A1)	0.02468	0.05398	-0.27482

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	-	-0.01086	-0.01090	-0.01090
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00740	-0.00744	-0.00744
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.01217	0.02736	0.26602
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00783	0.00381	0.24006

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	-	0.01086	0.01090	0.01090
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00744	0.00745	0.00744
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00183	0.01459	0.25321
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02868	0.04262	0.27980

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)	-0.00264	-0.00262	-0.00262

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)	0.00265	0.00263	0.00263

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)	-0.00314	-0.00313	-0.00313

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)	0.00314	0.00313	0.00313

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)	-0.00303	0.00910	0.24624
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00303	0.00902	0.24681

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)	0.02165	0.03571	0.27336
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01920	0.03418	0.27248

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00566	0.00563	2.82325
sky130_osu_sc_18T_ms__nand2_l	0.00434	0.00432	1.94300

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	0.35321	1.41098
sky130_osu_sc_18T_ms__nand2_l	0.00000	0.19452	0.77726

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)	0.02259	0.57758	8.83693
	B->Y (FR)	0.02684	0.57525	8.72861
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.02533	0.63262	8.92674
	B->Y (FR)	0.03054	0.63408	8.88351

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)	0.02639	0.64355	10.05890
	B->Y (RF)	0.02997	0.61307	9.58659
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.02974	0.70267	9.96715
	B->Y (RF)	0.03321	0.67167	9.47036

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	0.01125	0.01633	0.06555
	B	0.00000	0.00000	0.00000
	B	0.01445	0.01937	0.07064
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00862	0.01153	0.04253
	B	0.00000	0.00000	0.00000
	B	0.01096	0.01375	0.04582

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	-0.00215	-0.00043	0.02055
	B	0.00000	0.00000	0.00000
	B	-0.00212	-0.00094	0.01740
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00159	-0.00042	0.01536
	B	0.00000	0.00000	0.00000
	B	-0.00156	-0.00079	0.01315

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)	-0.00813	-0.00818	-0.00818
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00592	-0.00594	-0.00595

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)	0.00816	0.00824	0.00820
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00593	0.00598	0.00596

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)	-0.00759	-0.00763	-0.00761
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00551	-0.00553	-0.00553

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)	0.00767	0.00768	0.00763
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00557	0.00557	0.00554

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00566	0.00596	1.91431
sky130_osu_sc_18T_ms__nor2_l	0.00427	0.00460	1.29901

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	0.23941	0.70549
sky130_osu_sc_18T_ms__nor2_l	0.00000	0.13969	0.38863

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)	0.04299	0.67916	9.39302
	B->Y (FR)	0.03171	0.69110	9.73127
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.04769	0.74828	9.31733
	B->Y (FR)	0.03761	0.77213	9.81282

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)	0.02727	0.46714	6.39394
	B->Y (RF)	0.02121	0.45606	6.37196
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.02909	0.49868	6.22692
	B->Y (RF)	0.02343	0.48899	6.20774

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	0.01590	0.01779	0.05727
	B	0.00000	0.00000	0.00000
	B	0.01148	0.01612	0.07524
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.01156	0.01268	0.04000
	B	0.00000	0.00000	0.00000
	B	0.00873	0.01162	0.04959

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	0.00136	0.00301	0.03105
	B	0.00000	0.00000	0.00000
	B	-0.00208	-0.00005	0.02709
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00090	0.00209	0.02361
	B	0.00000	0.00000	0.00000
	B	-0.00141	0.00005	0.02056

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)	-0.00612	-0.00737	-0.00735
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00440	-0.00522	-0.00520

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)	0.00732	0.00744	0.00738
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00518	0.00526	0.00521

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)	-0.00322	-0.00324	-0.00323
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00240	-0.00243	-0.00242

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)	0.00335	0.00337	0.00327
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00249	0.00251	0.00244

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00571	0.00579	0.00480	1.86539

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	0.26577	1.09411

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)	0.04257	0.69989	9.64437
	A1->Y (FR)	0.05718	0.69215	9.31809
	B0->Y (FR)	0.03045	0.62354	8.63888

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)	0.03812	0.55875	7.62496
	A1->Y (RF)	0.04626	0.55502	7.40704
	B0->Y (RF)	0.02913	0.60365	8.42919

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	0.01606	0.01943	0.06917
	A1	0.00000	0.00000	0.00000
	A1	0.02043	0.02175	0.05670
	B0	0.00938	0.01340	0.05882

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	-0.00007	0.00078	0.02109
	A1	0.00000	0.00000	0.00000
	A1	0.00350	0.00393	0.02490
	B0	0.00094	0.00236	0.02413

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)	-0.00323	-0.00325	-0.00324
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00728	-0.00741	-0.00738
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00747	-0.00751	-0.00748

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)	0.00336	0.00338	0.00329
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00735	0.00741	0.00738
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00748	0.00751	0.00749

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)	-0.00602	-0.00724	-0.00724
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00724	-0.00736	-0.00732
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00740	-0.00739	-0.00741

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)	0.00722	0.00729	0.00728
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00729	0.00736	0.00732
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00741	0.00746	0.00743

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)	-0.00603	-0.00607	-0.00611

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)	0.00611	0.00616	0.00613

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00556	0.00582	0.00596	0.00584	1.87309

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	0.35908	1.41097

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)	0.06168	0.69402	9.29051
	A1->Y (FR)	0.05047	0.70641	9.63599
	B0->Y (FR)	0.03499	0.69051	9.63668
	B1->Y (FR)	0.04639	0.67939	9.29198

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)	0.06876	0.60511	7.83028
	A1->Y (RF)	0.05359	0.58156	7.70181
	B0->Y (RF)	0.04516	0.62548	8.48268
	B1->Y (RF)	0.06121	0.66366	8.79087

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	0.02685	0.02812	0.05950
	A1	0.01994	0.02398	0.07800
	B0	0.01228	0.01626	0.06987
	B1	0.01689	0.01842	0.05168

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00230	0.00273	0.02408
	A1	-0.00118	-0.00030	0.02048
	B0	-0.00110	0.00052	0.02461
	B1	0.00226	0.00333	0.02690

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)	-0.00610	-0.00737	-0.00735
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00610	-0.00737	-0.00735
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00723	-0.00736	-0.00735
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00742	-0.00746	-0.00743

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)	0.00733	0.00744	0.00738
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00733	0.00744	0.00738
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00731	0.00736	0.00735
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00743	0.00747	0.00745

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)	-0.00320	-0.00323	-0.00322
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00320	-0.00323	-0.00321
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00721	-0.00732	-0.00731
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00739	-0.00745	-0.00741

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)	0.00333	0.00335	0.00325
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00333	0.00335	0.00326
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00727	0.00732	0.00731
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00740	0.00745	0.00743

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)	-0.00318	-0.00321	-0.00320
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00318	-0.00321	-0.00319
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00795	-0.00810	-0.00805
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00798	-0.00804	-0.00811

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)	0.00331	0.00333	0.00324
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00331	0.00334	0.00324
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00806	0.00810	0.00805
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00810	0.00818	0.00814

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)	-0.00602	-0.00728	-0.00726
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00602	-0.00728	-0.00726
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00802	-0.00823	-0.00815
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00809	-0.00813	-0.00821

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)	0.00724	0.00734	0.00729
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00724	0.00733	0.00729
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00817	0.00823	0.00815
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00819	0.00828	0.00824

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00599	0.00579	3.59820
sky130_osu_sc_18T_ms__or2_2	0.00600	0.00579	6.86046
sky130_osu_sc_18T_ms__or2_4	0.00600	0.00580	13.04937
sky130_osu_sc_18T_ms__or2_8	0.00602	0.00583	24.45442
sky130_osu_sc_18T_ms__or2_l	0.00467	0.00442	2.40923

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	0.41649	0.70737
sky130_osu_sc_18T_ms__or2_2	0.00000	0.59357	1.41286
sky130_osu_sc_18T_ms__or2_4	0.00000	0.94772	2.82384
sky130_osu_sc_18T_ms__or2_8	0.00000	1.65602	5.64580
sky130_osu_sc_18T_ms__or2_l	0.00000	0.23713	0.38938

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)	0.05578	0.46301	6.32659
	B->Y (RR)	0.04773	0.43475	6.24406
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.06197	0.41267	6.26724
	B->Y (RR)	0.05356	0.38672	6.18169
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.08028	0.41509	6.45200
	B->Y (RR)	0.07156	0.39273	6.34683
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.11628	0.46427	6.70168
	B->Y (RR)	0.10727	0.44677	6.60416
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.06119	0.52334	6.26841
	B->Y (RR)	0.05344	0.49626	6.16650

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)	0.08060	0.54065	7.23040
	B->Y (FF)	0.06547	0.53460	7.45741
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.09426	0.50206	7.11858
	B->Y (FF)	0.07921	0.50119	7.32717
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.13149	0.52438	7.25373
	B->Y (FF)	0.11654	0.53111	7.43446
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.21003	0.60826	7.30372
	B->Y (FF)	0.19509	0.62390	7.45890
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.08872	0.58861	6.94954
	B->Y (FF)	0.07399	0.58971	7.22669

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	0.01148	0.01723	0.12930
	B	0.00000	0.00000	0.00000
	B	0.00822	0.01643	0.16190
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.02036	0.02667	0.14160
	B	0.00000	0.00000	0.00000
	B	0.01692	0.02526	0.17004
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.03997	0.04611	0.16127
	B	0.00000	0.00000	0.00000
	B	0.03633	0.04595	0.18460
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.08671	0.09036	0.20013
	B	0.00000	0.00000	0.00000
	B	0.08275	0.08873	0.22105
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00844	0.01229	0.09391
	B	0.00000	0.00000	0.00000
	B	0.00632	0.01191	0.11292

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	0.02536	0.03103	0.15107
	B	0.00000	0.00000	0.00000
	B	0.02052	0.03231	0.22296
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.03242	0.03738	0.15731
	B	0.00000	0.00000	0.00000
	B	0.02755	0.03820	0.22634
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.05512	0.05365	0.17125
	B	0.00000	0.00000	0.00000
	B	0.05041	0.05499	0.23497
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.11777	0.08930	0.20048
	B	0.00000	0.00000	0.00000
	B	0.11295	0.09063	0.25725
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01918	0.02285	0.10349
	B	0.00000	0.00000	0.00000
	B	0.01585	0.02322	0.14969

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)	-0.00615	-0.00740	-0.00738
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00615	-0.00740	-0.00738
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00615	-0.00740	-0.00738
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00615	-0.00740	-0.00738
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00440	-0.00523	-0.00522

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)	0.00735	0.00746	0.00741
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00736	0.00746	0.00741
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00736	0.00746	0.00741
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00736	0.00746	0.00741
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00520	0.00526	0.00523

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)	-0.00323	-0.00326	-0.00325
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00323	-0.00326	-0.00325
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00323	-0.00326	-0.00325
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00323	-0.00326	-0.00325
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00245	-0.00246	-0.00246

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)	0.00339	0.00340	0.00329
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00337	0.00340	0.00329
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00337	0.00340	0.00329
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00337	0.00340	0.00329
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00256	0.00256	0.00248

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00596	0.00754	1.93460
sky130_osu_sc_18T_ms__tbufi_l	0.00461	0.00586	1.30597

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	0.35382	1.41098
sky130_osu_sc_18T_ms__tbufi_l	0.00000	0.19478	0.77726

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)	0.03082	0.69248	9.77372
	OE->Y (FR)	0.04179	0.40257	5.55702
	OE->Y (RR)	0.06026	0.53190	6.44204
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.03664	0.77293	9.84138
	OE->Y (FR)	0.04445	0.40233	5.55676
	OE->Y (RR)	0.06617	0.61201	6.39244

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)	0.02619	0.55986	7.86992
	OE->Y (FF)	0.04221	0.40258	5.55702
	OE->Y (RF)	0.02459	0.52197	7.32939
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.02978	0.60451	7.69932
	OE->Y (FF)	0.04498	0.40231	5.55671
	OE->Y (RF)	0.02864	0.56667	7.13218

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	0.01082	0.01532	0.06629
	OE	0.00000	0.00000	0.00000
	OE	0.01126	0.02184	0.22267
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00827	0.01081	0.04319
	OE	0.00000	0.00000	0.00000
	OE	0.00800	0.01574	0.15355

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	-0.00214	-0.00027	0.02299
	OE	0.00000	0.00000	0.00000
	OE	0.00710	0.01893	0.25453
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00144	-0.00019	0.01751
	OE	0.00000	0.00000	0.00000
	OE	0.00494	0.01267	0.16850

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)	-0.00548	-0.00553	-0.00550
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00468	-0.00478	-0.00470
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00419	-0.00421	-0.00421
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00367	-0.00367	-0.00369

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)	0.00548	0.00553	0.00550
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00477	0.00480	0.00473
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00419	0.00421	0.00421
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00373	0.00375	0.00370

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)	0.00436	0.01690	0.25837
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00385	0.01650	0.25779
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00296	0.01122	0.17119
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00260	0.01080	0.17072

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)	0.01264	0.02717	0.26837
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01250	0.02729	0.26849
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00988	0.01900	0.17902
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00985	0.01908	0.17910

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.00595	0.00939	1.93479
sky130_osu_sc_18T_ms__tnbufi_l	0.00460	0.00702	1.29904

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	0.58868	0.70643
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	0.32420	0.38900

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)	0.03082	0.69244	9.77418
	OE->Y (RR)	0.02628	0.40378	5.55813
	OE->Y (FR)	0.04103	0.67732	9.37843
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.03671	0.77120	9.80779
	OE->Y (RR)	0.02764	0.40405	5.55841
	OE->Y (FR)	0.04590	0.74529	9.24670

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)	0.02589	0.55978	7.87040
	OE->Y (RF)	0.02607	0.40377	5.55814
	OE->Y (FF)	0.04262	0.44729	5.52373
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.02941	0.60174	7.67335
	OE->Y (RF)	0.02738	0.40404	5.55841
	OE->Y (FF)	0.04852	0.49988	5.37539

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	0.01106	0.01554	0.06655
	OE	0.00000	0.00000	0.00000
	OE	0.02789	0.04376	0.28317
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00852	0.01105	0.04361
	OE	0.00000	0.00000	0.00000
	OE	0.02066	0.03076	0.19004

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	-0.00249	-0.00059	0.02267
	OE	0.00000	0.00000	0.00000
	OE	0.02416	0.03954	0.24815
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00178	-0.00053	0.01726
	OE	0.00000	0.00000	0.00000
	OE	0.01795	0.02766	0.16135

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)	-0.00471	-0.00474	-0.00473
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00398	-0.00407	-0.00400
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00347	-0.00348	-0.00348
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00299	-0.00300	-0.00301

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)	0.00471	0.00474	0.00473
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00406	0.00409	0.00404
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00347	0.00348	0.00348
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00305	0.00306	0.00303

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)	-0.00897	0.00354	0.24601
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00907	0.00363	0.24615
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00634	0.00181	0.16267
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00639	0.00188	0.16273

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)	0.02094	0.03823	0.28024
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.02064	0.03742	0.27998
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01561	0.02651	0.18719
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01540	0.02674	0.18708

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.01179	0.01084	1.98137

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	1.17724	2.11740

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	0.07565	0.56410	6.62785
	A->Y (FR)	!B	0.03974	0.70077	9.82558
	B->Y (RR)	A	0.06070	0.55278	6.76968
	B->Y (FR)	!A	0.05687	0.69658	9.52710

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	0.07664	0.52433	6.06542
	A->Y (RF)	!B	0.03767	0.55860	7.76364
	B->Y (FF)	A	0.06622	0.51602	6.08486
	B->Y (RF)	!A	0.04865	0.57096	7.75075

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	0.01102	0.02056	0.22021
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02663	0.04300	0.31914
	B	A	0.00000	0.00000	0.00000
	B	A	0.00283	0.01491	0.25468
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.03009	0.04487	0.29813

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	0.03318	0.04560	0.27675
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00666	0.01830	0.26475
	B	A	0.00000	0.00000	0.00000
	B	A	0.03029	0.04494	0.28436
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00885	0.02024	0.26320

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	0.01178	0.01088	1.97356

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	1.17724	1.87974

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	0.07230	0.55541	6.73038
	A->Y (FR)	B	0.05043	0.69658	9.63930
	B->Y (RR)	!A	0.06271	0.55342	6.76642
	B->Y (FR)	A	0.05505	0.69915	9.59608

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	0.06442	0.50111	5.70572
	A->Y (RF)	B	0.03683	0.57976	7.95607
	B->Y (FF)	!A	0.06098	0.50072	5.88469
	B->Y (RF)	A	0.04536	0.55166	7.46917

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	0.03171	0.04784	0.31673
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00489	0.01434	0.24993
	B	A	0.00000	0.00000	0.00000
	B	A	0.03290	0.04887	0.31059
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00227	0.01417	0.25691

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	0.00539	0.01759	0.27729
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.03393	0.04844	0.25640
	B	A	0.00000	0.00000	0.00000
	B	A	0.00547	0.01701	0.26665
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.03086	0.04654	0.28858

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_tt_2P10_25C.ccs
Cell Library: Process , Voltage 2.10,
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	1.29370
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	685703.00000	1371410.00000
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
	-0.00116	0.21471	2.89603

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
	11.93010	11.33160	3.41489