sky130_osu_sc_18T_ms_ff_1P95_100C.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_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.02092	0.02075	0.01575	3.79124	1.98507	3.87794
sky130_osu_sc_18T_ms__addf_l	0.02090	0.02073	0.01573	2.81491	1.98599	2.82319

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	617.05600	786.93600
sky130_osu_sc_18T_ms__addf_l	0.00000	474.76300	644.63700

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)	0.10689	1.38928	24.55270
	B->CO (RR)	0.08892	1.32286	23.46850
	CI->CO (RR)	0.10172	1.43145	25.18650
	CON->CO (FR)	0.01802	0.52709	8.89693
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.11028	1.37245	21.71540
	B->CO (RR)	0.09202	1.30917	20.84280
	CI->CO (RR)	0.10509	1.41555	22.37380
	CON->CO (FR)	0.02085	0.61849	9.70532

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)	0.11726	1.52443	27.07650
	B->CO (FF)	0.10279	1.47829	26.21770
	CI->CO (FF)	0.10161	1.54837	27.58540
	CON->CO (RF)	0.02056	0.59617	10.21070
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.11496	1.43076	22.69440
	B->CO (FF)	0.10081	1.39564	22.18720
	CI->CO (FF)	0.09927	1.45668	23.24730
	CON->CO (RF)	0.02216	0.63232	10.05270

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)	0.08405	0.63172	8.30557
	B->CON (FR)	0.07051	0.62549	8.36858
	CI->CON (FR)	0.06839	0.65956	8.90722
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.08017	0.62799	8.30471
	B->CON (FR)	0.06698	0.62227	8.36740
	CI->CON (FR)	0.06450	0.65599	8.90622

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)	0.08061	0.62046	8.18522
	B->CON (RF)	0.07910	0.62059	8.15412
	CI->CON (RF)	0.07546	0.66566	8.88507
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.07747	0.61795	8.18483
	B->CON (RF)	0.07626	0.61807	8.15383
	CI->CON (RF)	0.07229	0.66230	8.88467

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)	0.17284	1.36678	22.32080
	B->S (-R)	0.18738	1.34680	21.17600
	CI->S (-R)	0.15581	1.38859	22.83220
	CON->S (RR)	0.05851	0.48633	7.20244
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.16874	1.29468	18.93030
	B->S (-R)	0.18391	1.28299	18.13400
	CI->S (-R)	0.15163	1.31741	19.47360
	CON->S (RR)	0.06000	0.54167	7.51274

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)	0.17056	1.39703	22.54720
	B->S (-F)	0.15992	1.33111	21.57080
	CI->S (-F)	0.16556	1.43900	23.18720
	CON->S (FF)	0.06632	0.55534	8.18491
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.16292	1.30491	18.83390
	B->S (-F)	0.15275	1.25064	18.18020
	CI->S (-F)	0.15785	1.34765	19.49880
	CON->S (FF)	0.06482	0.58565	7.99599

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	0.01503	0.02700	0.27206
	B	0.01696	0.02765	0.24533
	CI	0.01848	0.03091	0.27505
sky130_osu_sc_18T_ms__addf_l	A	0.01112	0.02029	0.18717
	B	0.01323	0.02137	0.17075
	CI	0.01454	0.02412	0.19061

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.03332	0.04618	0.31618
	B	0.03213	0.04253	0.28244
	CI	0.02996	0.04361	0.31775
sky130_osu_sc_18T_ms__addf_l	A	0.02869	0.03931	0.23683
	B	0.02775	0.03632	0.21302
	CI	0.02532	0.03660	0.23841

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.02895	0.03815	0.19837
	B	0.02785	0.03625	0.18723
	CI	0.02575	0.03579	0.20292
sky130_osu_sc_18T_ms__addf_l	A	0.02607	0.03493	0.18684
	B	0.02506	0.03320	0.17652
	CI	0.02284	0.03254	0.19118

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01173	0.02039	0.16550
	B	0.01353	0.02096	0.15352
	CI	0.01526	0.02449	0.17121
sky130_osu_sc_18T_ms__addf_l	A	0.00890	0.01667	0.14527
	B	0.01033	0.01715	0.13414
	CI	0.01238	0.02052	0.15031

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01100	0.01809	0.28497
	B	0.01287	0.02355	0.22980
	CI	0.01953	0.02949	0.27336
sky130_osu_sc_18T_ms__addf_l	A	0.00876	0.01671	0.28714
	B	0.00742	0.01935	0.24787
	CI	0.01724	0.02803	0.27640

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.06850	0.08105	0.31562
	B	0.05661	0.07114	0.33913
	CI	0.04954	0.06203	0.28154
sky130_osu_sc_18T_ms__addf_l	A	0.06234	0.07541	0.32188
	B	0.04677	0.06224	0.33840
	CI	0.04366	0.05662	0.28746

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.01015	0.01120	3.97863	2.11202	4.01522
sky130_osu_sc_18T_ms__addh_l	0.01015	0.01120	2.39798	2.11317	2.45488

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	688.67600	787.51800
sky130_osu_sc_18T_ms__addh_l	0.00000	611.74800	725.95400

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)	0.06875	0.50160	7.19482
	B->CO (RR)	0.07188	0.49705	7.34537
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.06915	0.56789	7.35950
	B->CO (RR)	0.07228	0.56139	7.37706

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)	0.05587	0.51117	7.98518
	B->CO (FF)	0.06074	0.52979	8.15006
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.05630	0.55642	7.47195
	B->CO (FF)	0.06095	0.57585	7.64935

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	0.09320	0.41960	4.23368
	A->CON (FR)	!B	0.04426	0.61066	8.63122
	B->CON (RR)	A	0.09558	0.41424	4.37813
	B->CON (FR)	!A	0.05723	0.59464	8.26184
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.08419	0.40734	4.32176
	A->CON (FR)	!B	0.03977	0.60540	8.62915
	B->CON (RR)	A	0.08664	0.40039	4.35482
	B->CON (FR)	!A	0.05271	0.58950	8.25944

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	0.09505	0.54767	6.34269
	A->CON (RF)	!B	0.04723	0.63369	8.95176
	B->CON (FF)	A	0.09195	0.58786	6.95148
	B->CON (RF)	!A	0.05623	0.61111	8.46393
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.08636	0.52338	6.16991
	A->CON (RF)	!B	0.04335	0.62945	8.94850
	B->CON (FF)	A	0.08338	0.56375	6.77011
	B->CON (RF)	!A	0.05242	0.60679	8.46276

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	0.07241	1.40580	25.84320
	A->S (FR)	B	0.12103	1.31291	23.10590
	B->S (RR)	!A	0.08218	1.35324	24.56390
	B->S (FR)	A	0.11762	1.38385	24.49850
	CON->S (FR)	-	0.02041	0.56368	9.59852
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.07216	1.29255	19.93890
	A->S (FR)	B	0.11633	1.18066	17.03150
	B->S (RR)	!A	0.08231	1.25225	19.08120
	B->S (FR)	A	0.11270	1.24079	18.00640
	CON->S (FR)	-	0.02294	0.64032	9.73645

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	0.07261	1.44491	26.75690
	A->S (RF)	B	0.11917	1.08789	18.28260
	B->S (FF)	!A	0.08559	1.43593	26.48330
	B->S (RF)	A	0.12158	1.08179	18.42570
	CON->S (RF)	-	0.01951	0.59188	10.28580
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.07025	1.30103	20.22890
	A->S (RF)	B	0.11207	1.01102	14.19940
	B->S (FF)	!A	0.08321	1.29289	19.90030
	B->S (RF)	A	0.11453	1.00309	14.20680
	CON->S (RF)	-	0.02184	0.64114	9.82471

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	0.01698	0.02265	0.12442
	B	0.00000	0.00000	0.00000
	B	0.01574	0.02207	0.15346
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01463	0.02052	0.12941
	B	0.00000	0.00000	0.00000
	B	0.01336	0.01971	0.14613

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	0.02115	0.03096	0.21381
	B	0.00000	0.00000	0.00000
	B	0.02294	0.03482	0.23729
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01834	0.02638	0.16548
	B	0.00000	0.00000	0.00000
	B	0.02008	0.02965	0.17905

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	0.01440	0.02007	0.12056
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02059	0.02682	0.11181
	B	A	0.00000	0.00000	0.00000
	B	A	0.01320	0.01957	0.14819
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02230	0.02694	0.10144
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01216	0.01810	0.12611
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01744	0.02287	0.09146
	B	A	0.00000	0.00000	0.00000
	B	A	0.01093	0.01727	0.14339
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01919	0.02289	0.08163

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	0.02009	0.02895	0.18205
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01270	0.01902	0.10705
	B	A	0.00000	0.00000	0.00000
	B	A	0.02207	0.03275	0.19481
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01188	0.01749	0.10258
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01771	0.02567	0.16257
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01031	0.01458	0.07230
	B	A	0.00000	0.00000	0.00000
	B	A	0.01966	0.02912	0.17606
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00949	0.01309	0.07053

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	0.02375	0.03359	0.21721
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01888	0.02619	0.14887
	B	A	0.00000	0.00000	0.00000
	B	A	0.02643	0.03835	0.24200
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01703	0.02349	0.13266
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01999	0.02805	0.16782
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01401	0.01838	0.07692
	B	A	0.00000	0.00000	0.00000
	B	A	0.02228	0.03188	0.18264
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01268	0.01661	0.07429

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	0.01939	0.02512	0.13237
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02477	0.03116	0.12671
	B	A	0.00000	0.00000	0.00000
	B	A	0.01812	0.02449	0.15570
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02663	0.03181	0.12138
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01558	0.02155	0.13089
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01919	0.02416	0.09172
	B	A	0.00000	0.00000	0.00000
	B	A	0.01430	0.02064	0.14846
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02105	0.02479	0.08484

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00549	0.00563	4.03433
sky130_osu_sc_18T_ms__and2_2	0.00549	0.00564	7.62846
sky130_osu_sc_18T_ms__and2_4	0.00550	0.00565	14.49534
sky130_osu_sc_18T_ms__and2_6	0.00553	0.00565	21.43324
sky130_osu_sc_18T_ms__and2_8	0.00552	0.00568	27.12366
sky130_osu_sc_18T_ms__and2_l	0.00434	0.00447	2.82375

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	328.28300	524.96700
sky130_osu_sc_18T_ms__and2_2	0.00000	525.22000	525.30200
sky130_osu_sc_18T_ms__and2_4	0.00000	918.99300	1050.20000
sky130_osu_sc_18T_ms__and2_6	0.00000	1312.75000	1575.09000
sky130_osu_sc_18T_ms__and2_8	0.00000	1706.40000	2099.88000
sky130_osu_sc_18T_ms__and2_l	0.00000	150.53900	240.77300

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)	0.05261	0.46811	7.39877
	B->Y (RR)	0.05636	0.44791	6.93975
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.06132	0.42647	7.33071
	B->Y (RR)	0.06517	0.40477	6.84310
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.08593	0.43422	7.44792
	B->Y (RR)	0.08984	0.41074	6.95435
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.11183	0.46180	7.60960
	B->Y (RR)	0.11569	0.43613	7.11618
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.13720	0.49212	7.63384
	B->Y (RR)	0.14115	0.46420	7.11480
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.05928	0.52313	7.38243
	B->Y (RR)	0.06339	0.50528	6.98895

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)	0.04491	0.45878	7.46949
	B->Y (FF)	0.04698	0.46998	7.55547
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.04937	0.39425	7.19599
	B->Y (FF)	0.05214	0.40644	7.31847
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.06729	0.38606	7.18861
	B->Y (FF)	0.07016	0.39693	7.33569
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.08753	0.40679	7.28793
	B->Y (FF)	0.09032	0.41751	7.43663
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.10667	0.42724	7.05506
	B->Y (FF)	0.10966	0.43653	7.20208
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.04956	0.52977	7.50615
	B->Y (FF)	0.05247	0.54451	7.63707

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	0.02062	0.04217	0.40671
	B	0.00000	0.00000	0.00000
	B	0.02046	0.03623	0.31520
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.02890	0.04912	0.42104
	B	0.00000	0.00000	0.00000
	B	0.02879	0.04366	0.31957
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.05003	0.06647	0.43731
	B	0.00000	0.00000	0.00000
	B	0.04994	0.06142	0.32978
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.08039	0.08995	0.45604
	B	0.00000	0.00000	0.00000
	B	0.08040	0.08280	0.34192
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.11543	0.11543	0.48246
	B	0.00000	0.00000	0.00000
	B	0.11522	0.10628	0.35173
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01143	0.02640	0.27871
	B	0.00000	0.00000	0.00000
	B	0.01142	0.02303	0.22780

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	0.02458	0.04791	0.37588
	B	0.00000	0.00000	0.00000
	B	0.02675	0.04954	0.36617
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.03780	0.06003	0.38674
	B	0.00000	0.00000	0.00000
	B	0.03992	0.06155	0.37669
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.07275	0.08839	0.40784
	B	0.00000	0.00000	0.00000
	B	0.07458	0.08930	0.39573
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.11012	0.11815	0.43066
	B	0.00000	0.00000	0.00000
	B	0.11193	0.11843	0.41584
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.15470	0.14836	0.45371
	B	0.00000	0.00000	0.00000
	B	0.15643	0.14775	0.43380
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01709	0.03271	0.25234
	B	0.00000	0.00000	0.00000
	B	0.01880	0.03414	0.24628

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)	-0.00445	-0.00448	-0.00450
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00217	-0.00220	-0.00222
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00239	0.00236	0.00234
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00692	0.00689	0.00687
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01151	0.01148	0.01146
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00403	-0.00406	-0.00408

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)	0.00906	0.00912	0.00909
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01135	0.01141	0.01138
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01593	0.01598	0.01596
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.02054	0.02059	0.02057
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.02508	0.02513	0.02511
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00617	0.00621	0.00619

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)	-0.00407	-0.00410	-0.00409
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00179	-0.00182	-0.00181
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00277	0.00273	0.00275
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00733	0.00730	0.00732
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01188	0.01186	0.01188
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00376	-0.00382	-0.00377

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)	0.00887	0.00871	0.00868
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01116	0.01100	0.01097
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01574	0.01557	0.01555
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.02031	0.02015	0.02012
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.02488	0.02472	0.02470
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00602	0.00591	0.00589

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00528	0.00543	0.00524	1.91837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	130.36600	262.18900

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)	0.04651	0.58657	8.10167
	A1->Y (FR)	0.03977	0.55775	7.74735
	B0->Y (FR)	0.03302	0.61899	8.70881

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)	0.04419	0.54754	7.48025
	A1->Y (RF)	0.04025	0.57722	7.94947
	B0->Y (RF)	0.02553	0.55175	7.80848

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	0.01622	0.02174	0.11152
	A1	0.00000	0.00000	0.00000
	A1	0.01355	0.01900	0.10732
	B0	0.00926	0.01945	0.14166

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	0.00895	0.01224	0.06922
	A1	0.00000	0.00000	0.00000
	A1	0.00922	0.01348	0.07541
	B0	0.00425	0.00950	0.07449

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)	-0.00385	-0.00506	-0.00390
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00372	-0.00378	-0.00374
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00601	-0.00606	-0.00602

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)	0.00837	0.00840	0.00794
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00829	0.00835	0.00832
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00624	0.00609	0.00605

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)	-0.00380	-0.00499	-0.00383
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00366	-0.00368	-0.00367
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00642	-0.00647	-0.00648

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)	0.00830	0.00834	0.00788
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00822	0.00831	0.00825
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00647	0.00652	0.00651

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)	-0.00219	-0.00221	-0.00206

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)	0.00504	0.00500	0.00396

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00528	0.00544	0.00558	0.00536	1.81342

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi22_1	0.00000	145.44400	523.28300

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)	0.05863	0.59776	7.96782
	A1->Y (FR)	0.05214	0.57901	7.77799
	B0->Y (FR)	0.03444	0.60670	8.40519
	B1->Y (FR)	0.04068	0.63370	8.69511

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)	0.05829	0.55150	7.21184
	A1->Y (RF)	0.05441	0.58112	7.68742
	B0->Y (RF)	0.02786	0.55116	7.66486
	B1->Y (RF)	0.03177	0.52110	7.18832

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	0.02021	0.02572	0.12384
	A1	0.01755	0.02297	0.11858
	B0	0.01004	0.02030	0.14675
	B1	0.01267	0.02257	0.14764

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.01304	0.01630	0.07813
	A1	0.01335	0.01761	0.08451
	B0	0.01066	0.01532	0.07778
	B1	0.01029	0.01416	0.07066

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)	-0.00326	-0.00453	-0.00201
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00145	-0.00150	-0.00147
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00601	-0.00605	-0.00602
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00601	-0.00603	-0.00602

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)	0.01069	0.01063	0.00967
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.01056	0.01062	0.01059
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00624	0.00609	0.00605
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00624	0.00609	0.00605

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)	-0.00319	-0.00446	-0.00195
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00139	-0.00146	-0.00140
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00641	-0.00646	-0.00648
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00641	-0.00646	-0.00648

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)	0.01062	0.01059	0.00961
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.01049	0.01052	0.01051
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00647	0.00651	0.00650
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00647	0.00651	0.00650

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)	-0.00217	-0.00219	-0.00206
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00009	-0.00015	-0.00012
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00658	-0.00660	-0.00664
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00659	-0.00660	-0.00664

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)	0.00514	0.00511	0.00411
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00445	0.00446	0.00430
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00663	0.00669	0.00667
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00663	0.00669	0.00667

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)	-0.00219	-0.00220	-0.00208
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00011	-0.00014	-0.00014
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00610	-0.00613	-0.00611
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00610	-0.00614	-0.00611

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)	0.00516	0.00512	0.00412
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00447	0.00447	0.00432
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00633	0.00616	0.00614
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00633	0.00616	0.00614

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00563	4.03897
sky130_osu_sc_18T_ms__buf_2	0.00563	7.71827
sky130_osu_sc_18T_ms__buf_4	0.00563	14.72581
sky130_osu_sc_18T_ms__buf_6	0.00096	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00566	27.97503
sky130_osu_sc_18T_ms__buf_l	0.00450	2.79496

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	262.83000	262.86600
sky130_osu_sc_18T_ms__buf_2	0.00000	394.24400	525.37900
sky130_osu_sc_18T_ms__buf_4	0.00000	657.00900	1050.29000
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	1182.48000	2099.98000
sky130_osu_sc_18T_ms__buf_l	0.00000	120.52200	120.53100

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)**	0.04190	0.42043	6.78394
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.04712	0.37350	6.68855
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.06374	0.37327	6.77710
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.09903	0.41865	6.96623
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.04757	0.47158	6.72021

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)**	0.04258	0.46282	7.67705
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.04766	0.40276	7.52787
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.06557	0.39358	7.53390
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.10486	0.43536	7.48806
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.04779	0.53290	7.65933

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	0.01299	0.03273	0.33721
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.02047	0.04037	0.34636
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.03833	0.05853	0.36402
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.08930	0.10249	0.39764
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00783	0.02247	0.25067

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	0.02371	0.04874	0.39331
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.03694	0.06109	0.40246
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.07160	0.08918	0.42370
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.15478	0.14886	0.46233
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01650	0.03318	0.26487

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
	-0.00094	-0.00094	-0.00091

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
	0.00094	0.00094	0.00091

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00544	0.00532	0.01525	3.70025	3.65245
sky130_osu_sc_18T_ms__dffr_l	0.00544	0.00532	0.01525	2.81604	2.81649

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	810.24300	1316.25000
sky130_osu_sc_18T_ms__dffr_l	0.00000	667.94900	1173.99000

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)	0.18069	1.08172	16.22240
	QN->Q (FR)	0.02145	0.61991	10.37080
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.18067	1.22718	17.23360
	QN->Q (FR)	0.02306	0.68119	10.71750

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)	0.19266	1.09542	16.59310
	QN->Q (RF)	0.02361	0.69866	11.88840
	RN->Q (FF)	0.14665	1.05472	16.49030
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.19688	1.22963	17.26850
	QN->Q (RF)	0.02425	0.71628	11.39160
	RN->Q (FF)	0.15125	1.18840	17.16230

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)	0.16791	0.55105	6.29340
	RN->QN (FR)	0.12181	0.51066	6.18807
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.16989	0.61369	6.81891
	RN->QN (FR)	0.12421	0.57364	6.71266

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)**	0.15867	0.61350	7.37911
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.15405	0.65520	7.55569

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)	-0.05184	-0.04990	0.04459
	setup	CK (R)	0.14499	0.17205	0.68696
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.05027	-0.04990	0.04389
	setup	CK (R)	0.14426	0.17229	0.65003

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)	-0.06994	-0.18495	0.20669
	setup	CK (R)	0.09362	0.19750	2.62369
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06855	-0.18495	0.32373
	setup	CK (R)	0.09360	0.19750	2.62448

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)	-0.05184	-0.04990	0.04459
	setup	CK (R)	0.14499	0.17205	0.68696
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.05027	-0.04990	0.04389
	setup	CK (R)	0.14426	0.17229	0.65003

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)	-0.06994	-0.18495	0.20669
	setup	CK (R)	0.09362	0.19750	2.62369
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06855	-0.18495	0.32373
	setup	CK (R)	0.09360	0.19750	2.62448

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)	0.11520	0.15851	0.92501
	removal	CK (R)	-0.02418	-0.03534	-0.16272
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.11518	0.15846	0.92675
	removal	CK (R)	-0.02418	-0.03534	-0.16272

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)	0.11520	0.15851	0.92501
	removal	CK (R)	-0.02418	-0.03534	-0.16272
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.11518	0.15846	0.92675
	removal	CK (R)	-0.02418	-0.03534	-0.16272

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 ()	0.08389	0.50415	13.33370
	min_pulse_width	RN ()	0.08389	0.50415	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.08389	0.50415	13.33370
	min_pulse_width	RN ()	0.08389	0.50415	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 ()	0.09147	0.50415	13.33370
	min_pulse_width	CK ()	0.09904	0.50415	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.08768	0.50415	13.33370
	min_pulse_width	CK ()	0.09525	0.50415	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 ()	0.18612	0.50415	13.33370
	min_pulse_width	CK ()	0.07632	0.50415	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.18612	0.50415	13.33370
	min_pulse_width	CK ()	0.07632	0.50415	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	0.03609	0.04990	0.23349
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.03207	0.04815	0.27883

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	0.03739	0.04408	0.17289
	RN	-0.00210	-0.18044	-3.51714
	RN	0.05241	0.06122	0.20450
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.03311	0.04246	0.22210
	RN	-0.00210	-0.15318	-2.67684
	RN	0.05157	0.06308	0.25264

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	0.03253	0.03918	0.16762
	RN	-0.00210	-0.17904	-3.46243
	RN	0.05328	0.06210	0.19946
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02942	0.03875	0.21911
	RN	-0.00210	-0.15319	-2.67414
	RN	0.04982	0.06131	0.25038

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	0.03217	0.04606	0.22976
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02835	0.04436	0.27311

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	0.00492	0.00396	0.00529
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03052	0.04497	0.35071
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01650	0.03063	0.31767
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00368	0.00272	0.00405
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02928	0.04373	0.34947
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01526	0.02939	0.31643

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	0.01749	0.01751	0.01704
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.04504	0.06176	0.36827
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02009	0.03627	0.32852
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01626	0.01628	0.01580
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.04380	0.06052	0.36702
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01885	0.03503	0.32728

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)	0.01488	0.03964	0.46786
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02637	0.05193	0.51159
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)	0.01364	0.03840	0.46662
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02513	0.05069	0.51035

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)	0.02100	0.04902	0.48045
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04174	0.06966	0.52817
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)	0.01976	0.04778	0.47921
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04050	0.06842	0.52693

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)	0.00799	0.03216	0.45770
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01604	0.04095	0.51006
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00630	0.03033	0.45530
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00676	0.03092	0.45646
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01480	0.03971	0.50882
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00506	0.02909	0.45406

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)	0.03044	0.05891	0.48679
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.06192	0.08853	0.64860
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.04845	0.07520	0.53852
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.06075	0.11025	0.77983
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03377	0.06128	0.48842
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02920	0.05768	0.48554
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.06068	0.08729	0.64736
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.04721	0.07397	0.53728
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.05951	0.10906	0.77863
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03253	0.06004	0.48718

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00539	0.00533	0.01152	0.01551	3.97982	3.95719
sky130_osu_sc_18T_ms__dffsr_l	0.00539	0.00533	0.01151	0.01551	2.82806	2.81330

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffsr_1	0.00000	951.92700	1316.44000
sky130_osu_sc_18T_ms__dffsr_l	0.00000	809.60500	1174.14000

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)	0.18537	1.08198	16.66620
	QN->Q (FR)	0.02029	0.60510	10.31200
	RN->Q (RR)	0.15041	1.05824	16.81230
	SN->Q (FR)	0.13087	1.04028	16.61430
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.19023	1.23271	17.25310
	QN->Q (FR)	0.02300	0.67971	10.70710
	RN->Q (RR)	0.15575	1.21031	17.40050
	SN->Q (FR)	0.13602	1.18862	17.19460

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)	0.22135	1.12417	16.99110
	QN->Q (RF)	0.02165	0.66452	11.50680
	RN->Q (FF)	0.14288	1.05119	16.92760
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.22933	1.26819	17.36100
	QN->Q (RF)	0.02421	0.71654	11.41060
	RN->Q (FF)	0.14985	1.19483	17.29700

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)	0.19723	0.58637	6.52648
	RN->QN (FR)	0.11930	0.51338	6.45852
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.20191	0.64992	6.83870
	RN->QN (FR)	0.12289	0.57637	6.77281

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)	0.16413	0.61331	7.55191
	RN->QN (RF)	0.12930	0.58997	7.69978
	SN->QN (FF)	0.10975	0.57112	7.50214
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.16390	0.65973	7.51538
	RN->QN (RF)	0.12959	0.63684	7.66129
	SN->QN (FF)	0.10991	0.61514	7.45641

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)	-0.05065	-0.05390	0.04631
	setup	CK (R)	0.14431	0.17364	0.88476
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.05203	-0.05390	0.04955
	setup	CK (R)	0.14219	0.17237	0.89281

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)	-0.07917	-0.19758	0.46898
	setup	CK (R)	0.10464	0.21006	2.69219
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07930	-0.19758	0.46874
	setup	CK (R)	0.10417	0.21006	2.69106

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)	-0.05065	-0.05390	0.04631
	setup	CK (R)	0.14431	0.17364	0.88476
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.05203	-0.05390	0.04955
	setup	CK (R)	0.14219	0.17237	0.89281

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)	-0.07917	-0.19758	0.46898
	setup	CK (R)	0.10464	0.21006	2.69219
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07930	-0.19758	0.46874
	setup	CK (R)	0.10417	0.21006	2.69106

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)	0.10420	0.14406	1.07832
	removal	CK (R)	-0.01523	-0.01871	-0.07967
	hold	SN (R)	-0.10160	-0.20790	-0.93309
	setup	SN (R)	0.12636	0.25993	3.93519
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.10212	0.14341	1.03855
	removal	CK (R)	-0.01523	-0.01871	-0.07967
	hold	SN (R)	-0.10044	-0.20374	-0.91866
	setup	SN (R)	0.12417	0.25301	3.89830

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)	0.10420	0.14406	1.07832
	removal	CK (R)	-0.01523	-0.01871	-0.07967
	hold	SN (R)	-0.10160	-0.20790	-0.94683
	hold	SN (R)	-0.10250	-0.20998	-0.93309
	setup	SN (R)	0.12636	0.25380	3.76649
	setup	SN (R)	0.12045	0.25993	3.93519
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.10212	0.14341	1.03855
	removal	CK (R)	-0.01523	-0.01871	-0.07967
	hold	SN (R)	-0.10313	-0.20374	-0.93552
	hold	SN (R)	-0.10044	-0.20582	-0.91866
	setup	SN (R)	0.12417	0.25053	3.72090
	setup	SN (R)	0.11882	0.25301	3.89830

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 ()	0.09525	0.50415	13.33370
	min_pulse_width	RN ()	0.09525	0.50415	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.09525	0.50415	13.33370
	min_pulse_width	RN ()	0.09147	0.50415	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)	0.03590	0.06653	2.67011
	removal	CK (R)	-0.01781	-0.04782	-0.28485
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03609	0.06653	2.61035
	removal	CK (R)	-0.01781	-0.04782	-0.28378

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)	0.03590	0.06653	2.67011
	removal	CK (R)	-0.01781	-0.04782	-0.28485
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03609	0.06653	2.61035
	removal	CK (R)	-0.01781	-0.04782	-0.28378

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 ()	0.10661	0.50415	13.33370
	min_pulse_width	SN ()	0.10282	0.50415	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.10661	0.50415	13.33370
	min_pulse_width	SN ()	0.09904	0.50415	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 ()	0.09147	0.50415	13.33370
	min_pulse_width	CK ()	0.11040	0.50415	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.08768	0.50415	13.33370
	min_pulse_width	CK ()	0.11040	0.50415	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 ()	0.18233	0.50415	13.33370
	min_pulse_width	CK ()	0.09147	0.50415	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.18233	0.50415	13.33370
	min_pulse_width	CK ()	0.09147	0.50415	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	0.04057	0.05638	0.28644
	RN	0.05857	0.06947	0.27242
	SN	-0.00210	-0.18850	-3.78303
	SN	0.04963	0.06007	0.23758
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.03670	0.05219	0.28386
	RN	0.05475	0.06532	0.27000
	SN	-0.00210	-0.15357	-2.68829
	SN	0.04562	0.05577	0.23343

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	0.04604	0.05330	0.19336
	RN	-0.00210	-0.18850	-3.78300
	RN	0.06492	0.07475	0.24174
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.04182	0.05118	0.23485
	RN	-0.00210	-0.15357	-2.68826
	RN	0.06078	0.07278	0.28360

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	0.03987	0.04717	0.18749
	RN	-0.00210	-0.18786	-3.75490
	RN	0.05980	0.06967	0.23706
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.03670	0.04605	0.22929
	RN	-0.00210	-0.15309	-2.67108
	RN	0.05664	0.06853	0.27852

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	0.03677	0.05270	0.28137
	RN	0.05476	0.06568	0.26770
	SN	-0.00210	-0.18786	-3.76115
	SN	0.04724	0.05767	0.23547
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.03293	0.04837	0.27864
	RN	0.05095	0.06155	0.26469
	SN	-0.00210	-0.15309	-2.67402
	SN	0.04345	0.05361	0.23161

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	0.00510	0.00510	0.00510
	(!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)	0.03664	0.05080	0.36088
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01809	0.03197	0.32005
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01893	0.03274	0.31913
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02108	0.03493	0.32197
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00386	0.00386	0.00386
	(!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)	0.03540	0.04956	0.35965
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01685	0.03073	0.31882
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01769	0.03151	0.31789
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01984	0.03369	0.32074

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	0.01723	0.01716	0.01704
	(!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)	0.05032	0.06621	0.37389
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02369	0.03952	0.33044
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02196	0.03765	0.32971
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02469	0.04063	0.33234
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01599	0.01592	0.01580
	(!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)	0.04906	0.06501	0.37264
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02244	0.03827	0.32919
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02071	0.03640	0.32847
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02344	0.03938	0.33109

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)	0.01611	0.04084	0.46851
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03075	0.05658	0.52661
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)	0.01487	0.03961	0.46728
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02951	0.05537	0.52538

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)	0.02155	0.05017	0.48286
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.04410	0.07236	0.53889
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)	0.02029	0.04891	0.48161
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.04284	0.07111	0.53722

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)	-0.00409	-0.00421	-0.00423
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00471	-0.00708	-0.00489
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00300	-0.00421	-0.00311
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01969	0.03275	0.31767
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)	-0.00533	-0.00544	-0.00547
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00593	-0.00830	-0.00611
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00423	-0.00544	-0.00434
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01847	0.03152	0.31644

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)	0.02270	0.02279	0.02276
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.02292	0.02300	0.02207
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.02349	0.02355	0.02309
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.03500	0.04828	0.33696
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)	0.02146	0.02155	0.02152
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.02166	0.02173	0.02081
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.02224	0.02230	0.02184
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.03374	0.04712	0.33570

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)	0.00800	0.03218	0.45816
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01817	0.04300	0.51236
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02098	0.04587	0.51457
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00906	0.03310	0.45850
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01885	0.06134	0.80719
sky130_osu_sc_18T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00676	0.03094	0.45691
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01692	0.04174	0.51111
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01973	0.04461	0.51332
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00782	0.03186	0.45726
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01761	0.06011	0.80594

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)	0.06929	0.09603	0.65512
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.03051	0.05895	0.48730
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.05057	0.07732	0.54003
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.05262	0.07944	0.54295
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.06708	0.11571	0.78728
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.03628	0.06381	0.49136
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03749	0.08677	0.83817
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.06805	0.09480	0.65389
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02927	0.05771	0.48606
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.04933	0.07608	0.53880
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.05138	0.07820	0.54171
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.06583	0.11437	0.78583
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.03504	0.06257	0.49012
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03623	0.08552	0.83690

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00542	0.00932	0.01530	3.72087	3.66608
sky130_osu_sc_18T_ms__dffs_l	0.00542	0.00932	0.01530	2.83112	2.82430

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	789.80800	1053.43000
sky130_osu_sc_18T_ms__dffs_l	0.00000	647.52700	911.16000

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)	0.14858	1.04102	16.13070
	QN->Q (FR)	0.02129	0.61475	10.29300
	SN->Q (FR)	0.10819	1.04035	16.33300
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.15078	1.19089	17.16300
	QN->Q (FR)	0.02292	0.67742	10.67270
	SN->Q (FR)	0.11083	1.18521	17.34600

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)	0.21091	1.11994	16.66180
	QN->Q (RF)	0.02343	0.69825	11.87360
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.21492	1.25378	17.34160
	QN->Q (RF)	0.02412	0.71498	11.38880

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)	0.18549	0.57407	6.30416
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.18736	0.63576	6.83227

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)	0.12746	0.57407	7.27319
	SN->QN (FF)	0.08697	0.57321	7.47056
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.12547	0.61886	7.45094
	SN->QN (FF)	0.08534	0.61507	7.63245

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)	-0.03929	-0.04366	0.06727
	setup	CK (R)	0.10958	0.14302	1.46763
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04175	-0.04366	0.06676
	setup	CK (R)	0.10916	0.14290	1.54601

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)	-0.07091	-0.18695	0.85961
	setup	CK (R)	0.09872	0.19958	2.67136
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.07110	-0.18695	0.87804
	setup	CK (R)	0.09872	0.19958	2.67110

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)	-0.03929	-0.04366	0.06727
	setup	CK (R)	0.10958	0.14302	1.46763
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04175	-0.04366	0.06676
	setup	CK (R)	0.10916	0.14290	1.54601

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)	-0.07091	-0.18695	0.85961
	setup	CK (R)	0.09872	0.19958	2.67136
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.07110	-0.18695	0.87804
	setup	CK (R)	0.09872	0.19958	2.67110

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)	0.03199	0.06253	2.00555
	removal	CK (R)	-0.01702	-0.04366	-0.31405
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.03127	0.06253	1.96932
	removal	CK (R)	-0.01702	-0.04366	-0.31405

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)	0.03199	0.06253	2.00555
	removal	CK (R)	-0.01702	-0.04366	-0.31405
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.03127	0.06253	1.96932
	removal	CK (R)	-0.01702	-0.04366	-0.31405

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 ()	0.07254	0.50415	13.33370
	min_pulse_width	SN ()	0.07254	0.50415	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.07254	0.50415	13.33370
	min_pulse_width	SN ()	0.06875	0.50415	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 ()	0.07254	0.50415	13.33370
	min_pulse_width	CK ()	0.10661	0.50415	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.06875	0.50415	13.33370
	min_pulse_width	CK ()	0.10282	0.50415	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 ()	0.15204	0.50415	13.33370
	min_pulse_width	CK ()	0.08389	0.50415	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.15204	0.50415	13.33370
	min_pulse_width	CK ()	0.08389	0.50415	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	0.03112	0.04503	0.22940
	SN	-0.00210	-0.18104	-3.53682
	SN	0.03830	0.04759	0.17438
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.02715	0.04318	0.27353
	SN	-0.00210	-0.15367	-2.69120
	SN	0.03413	0.04556	0.21709

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	0.03806	0.04492	0.18119
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.03368	0.04321	0.22934

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	0.03297	0.03990	0.17650
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.02978	0.03931	0.22548

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	0.02818	0.04212	0.22636
	SN	-0.00210	-0.17944	-3.48413
	SN	0.03682	0.04612	0.17314
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.02448	0.04049	0.26894
	SN	-0.00210	-0.15344	-2.68447
	SN	0.03307	0.04399	0.21520

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	0.00274	0.00269	0.00274
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02722	0.04274	0.35558
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01446	0.02871	0.31795
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00150	0.00145	0.00150
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02598	0.04150	0.35435
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01322	0.02747	0.31671

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	0.01501	0.01493	0.01481
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04160	0.05809	0.36682
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02071	0.03699	0.32907
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01377	0.01369	0.01358
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04036	0.05685	0.36558
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01948	0.03575	0.32781

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)	-0.00320	-0.00326	-0.00326
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01484	0.02746	0.28448
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)	-0.00444	-0.00448	-0.00450
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01361	0.02623	0.28325

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)	0.01733	0.01727	0.01721
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.02405	0.03862	0.29974
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)	0.01609	0.01603	0.01597
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.02281	0.03738	0.29850

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)	0.00568	0.02992	0.45634
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00674	0.03085	0.45671
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01514	0.05851	0.80691
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00444	0.02868	0.45509
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00550	0.02961	0.45547
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01390	0.05727	0.80566

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)	0.05986	0.08687	0.65094
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02816	0.05670	0.48546
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.05826	0.10754	0.77827
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03392	0.06150	0.48951
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.03438	0.08437	0.83825
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.05862	0.08562	0.64970
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02692	0.05547	0.48421
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.05702	0.10629	0.77702
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03268	0.06026	0.48828
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.03314	0.08313	0.83700

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00558	0.01524	3.99240	3.96693
sky130_osu_sc_18T_ms__dff_l	0.00558	0.01524	2.81218	2.77453

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	857.95700	1053.89000
sky130_osu_sc_18T_ms__dff_l	0.00000	715.63500	911.58300

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)	0.13237	1.02296	16.56770
	QN->Q (FR)	0.02014	0.60253	10.24420
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.13884	1.17939	17.13160
	QN->Q (FR)	0.02351	0.69000	10.86070

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)	0.17886	1.07485	16.96650
	QN->Q (RF)	0.02155	0.66301	11.48960
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.18689	1.22428	17.34730
	QN->Q (RF)	0.02418	0.71060	11.33550

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)	0.15551	0.53717	6.47418
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.16003	0.60477	6.80458

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)	0.11213	0.55505	7.44498
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.11357	0.60053	7.29778

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)	-0.03337	-0.03726	0.06825
	setup	CK (R)	0.09437	0.13106	1.78939
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.03737	-0.03726	0.06760
	setup	CK (R)	0.09297	0.12906	1.82980

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)	-0.06376	-0.18495	1.24695
	setup	CK (R)	0.07985	0.19750	2.64284
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.06376	-0.18495	1.36252
	setup	CK (R)	0.07985	0.19750	2.64243

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 ()	0.06496	0.50415	13.33370
	min_pulse_width	CK ()	0.09525	0.50415	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.06118	0.50415	13.33370
	min_pulse_width	CK ()	0.09147	0.50415	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 ()**	0.13311	0.50415	13.33370
	min_pulse_width	**CK ()**	0.06118	0.50415	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.13311	0.50415	13.33370
	min_pulse_width	**CK ()**	0.06118	0.50415	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	0.03186	0.04919	0.28704
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02813	0.04492	0.28313

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	0.03900	0.04703	0.19242
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.03497	0.04445	0.22541

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	0.03388	0.04193	0.18754
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.03089	0.04045	0.22537

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	0.02901	0.04639	0.28372
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02525	0.04215	0.27900

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	0.00263	0.00168	0.00301
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02603	0.04220	0.36450
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00139	0.00044	0.00177
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02480	0.04097	0.36327

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	0.01520	0.01522	0.01475
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.04296	0.05969	0.37742
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01396	0.01398	0.01351
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.04173	0.05846	0.37622

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)	0.00567	0.02992	0.45622
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00714	0.03128	0.45701
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00443	0.02869	0.45498
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00590	0.03004	0.45577

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)	0.02808	0.05662	0.48525
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.05890	0.08625	0.65695
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.05926	0.10964	0.79248
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03420	0.06179	0.48968
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02684	0.05538	0.48400
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.05767	0.08502	0.65575
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.05803	0.10842	0.79123
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03296	0.06055	0.48844

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00537	3.81544
sky130_osu_sc_18T_ms__inv_10	0.05066	31.77287
sky130_osu_sc_18T_ms__inv_2	0.01032	7.05328
sky130_osu_sc_18T_ms__inv_3	0.01539	10.22281
sky130_osu_sc_18T_ms__inv_4	0.02038	13.59869
sky130_osu_sc_18T_ms__inv_6	0.03056	19.79671
sky130_osu_sc_18T_ms__inv_8	0.04061	25.97259
sky130_osu_sc_18T_ms__inv_l	0.00423	2.62443

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	131.40100	262.49100
sky130_osu_sc_18T_ms__inv_10	0.00000	1313.35000	2623.61000
sky130_osu_sc_18T_ms__inv_2	0.00000	262.77500	524.93200
sky130_osu_sc_18T_ms__inv_3	0.00000	394.09400	787.26100
sky130_osu_sc_18T_ms__inv_4	0.00000	525.47000	1049.70000
sky130_osu_sc_18T_ms__inv_6	0.00000	788.14100	1574.43000
sky130_osu_sc_18T_ms__inv_8	0.00000	1050.80000	2099.12000
sky130_osu_sc_18T_ms__inv_l	0.00000	60.25550	120.34800

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)**	0.01869	0.53422	9.02347
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.03174	0.32899	8.79098
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.01600	0.44126	8.69520
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.01802	0.40975	8.80128
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.01884	0.37997	8.72728
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.02208	0.34961	8.69866
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.02646	0.33399	8.71266
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.02159	0.60810	9.36927

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)**	0.01944	0.57751	9.86758
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.03553	0.34233	9.16473
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.01682	0.47466	9.42112
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.01877	0.43862	9.49373
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.01926	0.40658	9.42497
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.02435	0.37349	9.33175
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.02957	0.35495	9.28246
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02166	0.61027	9.53658

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	0.00861	0.02012	0.13250
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.08431	0.23655	1.29143
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01569	0.04190	0.26312
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02402	0.06462	0.38721
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.03114	0.08903	0.51754
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.04728	0.13878	0.77743
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.06459	0.18629	1.03545
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00675	0.01310	0.08881

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	0.00526	0.01085	0.06351
sky130_osu_sc_18T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	0.05914	0.13750	0.64434
sky130_osu_sc_18T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	0.00807	0.02149	0.12932
sky130_osu_sc_18T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	0.01358	0.03515	0.19119
sky130_osu_sc_18T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	0.01733	0.04896	0.25559
sky130_osu_sc_18T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	0.02616	0.07497	0.38512
sky130_osu_sc_18T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	0.03967	0.10502	0.51223
sky130_osu_sc_18T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	0.00179	0.00606	0.05065

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.01882	0.01860	0.01091	0.01012

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	262.69100	262.78900

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)	-	0.01008	0.02009	0.02912
	A1->Y (RR)	-	0.01055	0.02012	0.02914
	S0->Y (RR)	(!A0 * A1)	0.03565	0.10457	0.17057
	S0->Y (FR)	(A0 * !A1)	0.02834	0.06847	0.04954

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)	-	0.00857	0.02049	0.02995
	A1->Y (FF)	-	0.00867	0.02054	0.02997
	S0->Y (FF)	(!A0 * A1)	0.04027	0.10785	0.19870
	S0->Y (RF)	(A0 * !A1)	0.02452	0.08420	0.23777

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	-	-0.00908	-0.00911	-0.00912
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00017	-0.00019	-0.00021
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00957	0.03903	0.46500
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00491	0.02137	0.44478

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	-	0.00909	0.00911	0.00912
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.01220	0.01222	0.01222
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00385	0.03187	0.45598
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02359	0.05147	0.47667

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)	0.00010	0.00011	0.00011

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)	0.00446	0.00445	0.00445

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)	-0.00253	-0.00253	-0.00253

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)	0.00253	0.00253	0.00253

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)	0.00010	0.02720	0.44988
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00005	0.02722	0.45054

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)	0.01774	0.04620	0.47098
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01558	0.04512	0.47027

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00539	0.00536	2.54616
sky130_osu_sc_18T_ms__nand2_l	0.00424	0.00423	1.81374

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	131.31300	524.67600
sky130_osu_sc_18T_ms__nand2_l	0.00000	60.22630	240.60400

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)	0.01902	0.46158	7.03886
	B->Y (FR)	0.02234	0.45961	6.95110
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.02183	0.53663	7.50176
	B->Y (FR)	0.02603	0.53848	7.47059

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)	0.02645	0.62435	9.59065
	B->Y (RF)	0.02997	0.59686	9.17197
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.02957	0.67102	9.42890
	B->Y (RF)	0.03309	0.64682	9.02475

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	0.00919	0.01981	0.13745
	B	0.00000	0.00000	0.00000
	B	0.01183	0.02276	0.14790
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00715	0.01363	0.09115
	B	0.00000	0.00000	0.00000
	B	0.00912	0.01564	0.09706

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	0.01304	0.01815	0.07217
	B	0.00000	0.00000	0.00000
	B	0.01275	0.01680	0.06802
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00548	0.00932	0.05503
	B	0.00000	0.00000	0.00000
	B	0.00535	0.00848	0.05246

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)	-0.00663	-0.00665	-0.00667
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00495	-0.00498	-0.00500

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)	0.00666	0.00672	0.00669
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00500	0.00503	0.00502

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)	-0.00615	-0.00618	-0.00616
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00461	-0.00464	-0.00462

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)	0.00638	0.00623	0.00619
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00477	0.00467	0.00464

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00540	0.00569	2.16084
sky130_osu_sc_18T_ms__nor2_l	0.00418	0.00450	1.48932

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	99.95290	262.03200
sky130_osu_sc_18T_ms__nor2_l	0.00000	47.17750	120.19300

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)	0.03522	0.57830	8.39455
	B->Y (FR)	0.02585	0.59969	8.78122
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.04011	0.65234	8.54693
	B->Y (FR)	0.03097	0.68178	9.06160

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)	0.02715	0.47662	6.83107
	B->Y (RF)	0.02094	0.46609	6.80449
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.02911	0.50304	6.57630
	B->Y (RF)	0.02324	0.49397	6.55096

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	0.01317	0.01989	0.11780
	B	0.00000	0.00000	0.00000
	B	0.00937	0.02029	0.14924
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00987	0.01442	0.08854
	B	0.00000	0.00000	0.00000
	B	0.00725	0.01417	0.10269

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	0.00401	0.00969	0.08139
	B	0.00000	0.00000	0.00000
	B	0.00383	0.00944	0.07664
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00224	0.00664	0.06695
	B	0.00000	0.00000	0.00000
	B	0.00138	0.00572	0.06259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00433	-0.00528	-0.00390
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00322	-0.00392	-0.00336

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)	0.00834	0.00837	0.00788
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00546	0.00549	0.00527

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)	-0.00229	-0.00232	-0.00220
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00174	-0.00177	-0.00171

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)	0.00374	0.00373	0.00315
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00248	0.00247	0.00220

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00544	0.00556	0.00468	2.09843

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	95.16520	382.09400

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)	0.03414	0.60173	8.64580
	A1->Y (FR)	0.04656	0.58661	8.28096
	B0->Y (FR)	0.02622	0.56558	8.13021

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)	0.03795	0.59051	8.48598
	A1->Y (RF)	0.04681	0.58472	8.21035
	B0->Y (RF)	0.02940	0.63230	9.17971

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	0.01323	0.02153	0.12473
	A1	0.00000	0.00000	0.00000
	A1	0.01699	0.02244	0.10599
	B0	0.00785	0.01571	0.10796

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	0.01014	0.01336	0.06132
	A1	0.00000	0.00000	0.00000
	A1	0.00931	0.01236	0.06463
	B0	0.00419	0.00858	0.06244

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)	-0.00125	-0.00127	-0.00116
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00601	-0.00607	-0.00603
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00605	-0.00606	-0.00605

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)	0.00479	0.00478	0.00420
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00601	0.00607	0.00604
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00622	0.00610	0.00607

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)	-0.00317	-0.00410	-0.00277
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00596	-0.00601	-0.00598
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00598	-0.00603	-0.00599

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)	0.00929	0.00936	0.00884
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00596	0.00605	0.00599
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00616	0.00605	0.00602

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)	-0.00504	-0.00508	-0.00514

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)	0.00514	0.00518	0.00516

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00534	0.00555	0.00569	0.00559	2.08447

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	149.85000	523.70300

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)	0.04995	0.58461	8.18419
	A1->Y (FR)	0.04046	0.60525	8.58647
	B0->Y (FR)	0.02854	0.59415	8.58186
	B1->Y (FR)	0.03804	0.57277	8.18149

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)	0.06861	0.63338	8.66395
	A1->Y (RF)	0.05373	0.60931	8.50392
	B0->Y (RF)	0.04550	0.65009	9.18220
	B1->Y (RF)	0.06107	0.68554	9.51650

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	0.02037	0.02574	0.10936
	A1	0.01662	0.02575	0.14061
	B0	0.01011	0.01937	0.13068
	B1	0.01406	0.01954	0.09948

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.01242	0.01528	0.06610
	A1	0.01212	0.01526	0.06303
	B0	0.00590	0.01059	0.06852
	B1	0.00581	0.01016	0.06758

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)	-0.00422	-0.00521	-0.00383
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00317	-0.00416	-0.00278
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00598	-0.00602	-0.00599
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00599	-0.00602	-0.00600

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)	0.00841	0.00844	0.00795
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00946	0.00950	0.00900
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00599	0.00606	0.00601
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00620	0.00607	0.00603

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)	-0.00220	-0.00223	-0.00211
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00115	-0.00117	-0.00106
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00596	-0.00600	-0.00597
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00597	-0.00602	-0.00599

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)	0.00380	0.00378	0.00321
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00485	0.00483	0.00426
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00596	0.00600	0.00599
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00618	0.00604	0.00602

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)	-0.00219	-0.00221	-0.00210
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00114	-0.00116	-0.00105
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00661	-0.00664	-0.00661
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00648	-0.00653	-0.00662

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)	0.00378	0.00377	0.00319
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00483	0.00482	0.00424
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00671	0.00673	0.00665
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00661	0.00667	0.00665

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)	-0.00418	-0.00514	-0.00376
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00313	-0.00409	-0.00271
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00670	-0.00673	-0.00669
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00657	-0.00660	-0.00670

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)	0.00833	0.00836	0.00787
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00938	0.00941	0.00892
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00679	0.00685	0.00674
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00672	0.00674	0.00673

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00577	0.00554	4.02710
sky130_osu_sc_18T_ms__or2_2	0.00577	0.00555	7.69932
sky130_osu_sc_18T_ms__or2_4	0.00578	0.00555	14.70893
sky130_osu_sc_18T_ms__or2_8	0.00581	0.00559	27.19968
sky130_osu_sc_18T_ms__or2_l	0.00460	0.00434	2.74120

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	165.82300	263.17300
sky130_osu_sc_18T_ms__or2_2	0.00000	231.68200	525.68600
sky130_osu_sc_18T_ms__or2_4	0.00000	363.37300	1050.60000
sky130_osu_sc_18T_ms__or2_8	0.00000	626.72500	2100.29000
sky130_osu_sc_18T_ms__or2_l	0.00000	77.38970	120.68900

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)	0.05181	0.43526	6.51447
	B->Y (RR)	0.04366	0.40909	6.44710
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.05751	0.38980	6.47909
	B->Y (RR)	0.04914	0.36438	6.38622
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.07479	0.38981	6.63262
	B->Y (RR)	0.06593	0.36777	6.52885
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.11053	0.43199	6.73105
	B->Y (RR)	0.10116	0.41330	6.61844
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.05800	0.48840	6.47658
	B->Y (RR)	0.04971	0.46278	6.37127

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)	0.06831	0.51409	7.91520
	B->Y (FF)	0.05564	0.51767	8.25965
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.07927	0.45855	7.76751
	B->Y (FF)	0.06657	0.46399	8.10374
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.11052	0.45966	7.83665
	B->Y (FF)	0.09783	0.46938	8.14878
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.17640	0.51675	7.63871
	B->Y (FF)	0.16378	0.53355	7.93080
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.07658	0.57763	7.76653
	B->Y (FF)	0.06351	0.58565	8.16528

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	0.01316	0.02709	0.25583
	B	0.00000	0.00000	0.00000
	B	0.01380	0.03156	0.30790
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.02113	0.03561	0.26654
	B	0.00000	0.00000	0.00000
	B	0.02140	0.03931	0.31417
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.03980	0.05469	0.28229
	B	0.00000	0.00000	0.00000
	B	0.03947	0.05785	0.32723
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.09211	0.10216	0.32070
	B	0.00000	0.00000	0.00000
	B	0.09064	0.10314	0.35909
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00896	0.01946	0.19691
	B	0.00000	0.00000	0.00000
	B	0.00856	0.02146	0.22359

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	0.02850	0.04341	0.29579
	B	0.00000	0.00000	0.00000
	B	0.02443	0.04719	0.38950
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.04333	0.05564	0.30475
	B	0.00000	0.00000	0.00000
	B	0.03928	0.05904	0.39726
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.08409	0.08403	0.32127
	B	0.00000	0.00000	0.00000
	B	0.08014	0.08700	0.41198
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.18864	0.14547	0.35835
	B	0.00000	0.00000	0.00000
	B	0.18481	0.15002	0.44393
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01988	0.03044	0.21072
	B	0.00000	0.00000	0.00000
	B	0.01692	0.03217	0.27038

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)	-0.00428	-0.00524	-0.00392
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00428	-0.00524	-0.00392
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00427	-0.00524	-0.00391
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00426	-0.00523	-0.00390
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00316	-0.00391	-0.00338

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)	0.00837	0.00838	0.00791
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00837	0.00839	0.00791
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00838	0.00839	0.00791
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00839	0.00840	0.00792
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00547	0.00550	0.00528

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)	-0.00229	-0.00232	-0.00221
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00229	-0.00232	-0.00221
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00228	-0.00231	-0.00221
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00229	-0.00230	-0.00219
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00179	-0.00180	-0.00175

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)	0.00378	0.00376	0.00319
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00379	0.00376	0.00319
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00379	0.00377	0.00319
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00380	0.00378	0.00320
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00253	0.00252	0.00225

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00569	0.00726	2.16264
sky130_osu_sc_18T_ms__tbufi_l	0.00451	0.00578	1.48144

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	131.47700	524.29300
sky130_osu_sc_18T_ms__tbufi_l	0.00000	60.31970	240.47800

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)	0.02521	0.59454	8.72075
	OE->Y (FR)	0.03523	0.38955	5.34321
	OE->Y (RR)	0.05268	0.49131	6.50883
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.03028	0.67624	8.98285
	OE->Y (FR)	0.03859	0.38937	5.34301
	OE->Y (RR)	0.05922	0.55385	6.37615

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)	0.02635	0.58659	8.57964
	OE->Y (FF)	0.03562	0.38953	5.34320
	OE->Y (RF)	0.02458	0.54613	8.04559
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.02966	0.61896	8.20892
	OE->Y (FF)	0.03913	0.38936	5.34300
	OE->Y (RF)	0.02814	0.58129	7.65380

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	0.01602	0.02504	0.13049
	OE	0.00000	0.00000	0.00000
	OE	0.01604	0.03983	0.40793
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.01018	0.01579	0.08850
	OE	0.00000	0.00000	0.00000
	OE	0.01001	0.02710	0.28969

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	0.01161	0.01621	0.07062
	OE	0.00000	0.00000	0.00000
	OE	0.01885	0.04529	0.46093
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00481	0.00837	0.05468
	OE	0.00000	0.00000	0.00000
	OE	0.01002	0.02824	0.31356

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)	-0.00456	-0.00458	-0.00451
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00349	-0.00351	-0.00345
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00352	-0.00353	-0.00349
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00282	-0.00283	-0.00280

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)	0.00456	0.00458	0.00451
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00438	0.00441	0.00413
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00352	0.00353	0.00349
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00332	0.00334	0.00318

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)	0.00857	0.03626	0.46496
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00574	0.03378	0.46332
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00491	0.02403	0.31830
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00346	0.02276	0.31727

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)	0.01082	0.04030	0.47246
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01017	0.03978	0.47109
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00862	0.02821	0.32376
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00818	0.02788	0.32309

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.00568	0.00889	2.16347
sky130_osu_sc_18T_ms__tnbufi_l	0.00451	0.00683	1.49774

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	218.90200	262.72800
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	100.39100	120.47600

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)	0.02519	0.59452	8.72193
	OE->Y (RR)	0.02591	0.39105	5.34471
	OE->Y (FR)	0.03351	0.56157	8.17294
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.03032	0.67903	9.04941
	OE->Y (RR)	0.02744	0.39150	5.34512
	OE->Y (FR)	0.03865	0.63848	8.33095

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)	0.02603	0.58659	8.58164
	OE->Y (RF)	0.02566	0.39105	5.34470
	OE->Y (FF)	0.03943	0.44447	6.08806
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.02929	0.62143	8.26838
	OE->Y (RF)	0.02718	0.39150	5.34514
	OE->Y (FF)	0.04509	0.50866	6.04076

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	0.00905	0.01812	0.12453
	OE	0.00000	0.00000	0.00000
	OE	0.02304	0.05343	0.47845
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00710	0.01270	0.08579
	OE	0.00000	0.00000	0.00000
	OE	0.01748	0.03776	0.33027

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	0.00475	0.00939	0.06396
	OE	0.00000	0.00000	0.00000
	OE	0.02587	0.05459	0.44159
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00160	0.00517	0.05125
	OE	0.00000	0.00000	0.00000
	OE	0.01774	0.03638	0.29483

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)	-0.00190	-0.00194	-0.00178
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00057	-0.00059	-0.00053
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00205	-0.00207	-0.00195
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00117	-0.00118	-0.00115

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)	0.00618	0.00620	0.00612
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00605	0.00607	0.00580
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00393	0.00395	0.00390
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00378	0.00379	0.00364

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)	-0.00436	0.02386	0.45526
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00510	0.02346	0.45360
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00376	0.01561	0.31105
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00428	0.01529	0.31030

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)	0.01981	0.05085	0.48292
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01714	0.04886	0.48095
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01434	0.03510	0.33113
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01301	0.03417	0.33019

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.01125	0.01034	2.23090

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	458.44000	786.41600

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	0.06599	0.52111	6.73799
	A->Y (FR)	!B	0.03163	0.59778	8.76702
	B->Y (RR)	A	0.05326	0.51678	6.95581
	B->Y (FR)	!A	0.04595	0.58737	8.45519

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	0.07092	0.51480	6.67138
	A->Y (RF)	!B	0.03728	0.59403	8.68115
	B->Y (FF)	A	0.06001	0.50721	6.71319
	B->Y (RF)	!A	0.04825	0.60417	8.64975

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	0.02316	0.04561	0.41253
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02174	0.05721	0.56140
	B	A	0.00000	0.00000	0.00000
	B	A	0.01596	0.04317	0.47264
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02472	0.05655	0.52818

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	0.04000	0.06646	0.47939
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02605	0.05396	0.50170
	B	A	0.00000	0.00000	0.00000
	B	A	0.04388	0.07247	0.49704
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02116	0.04900	0.49242

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	0.01127	0.01039	2.23477

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	458.47400	782.68800

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	0.06208	0.51721	6.91568
	A->Y (FR)	B	0.04123	0.59375	8.64245
	B->Y (RR)	!A	0.05474	0.51665	6.96218
	B->Y (FR)	A	0.04455	0.59348	8.58318

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	0.05915	0.49279	6.33404
	A->Y (RF)	B	0.03812	0.60558	8.73281
	B->Y (FF)	!A	0.05573	0.49540	6.55260
	B->Y (RF)	A	0.04537	0.58439	8.36308

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	0.03364	0.06775	0.56689
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01096	0.03598	0.46049
	B	A	0.00000	0.00000	0.00000
	B	A	0.03461	0.06831	0.55590
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00889	0.03646	0.47285

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	0.02477	0.05452	0.52863
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.04029	0.06738	0.45185
	B	A	0.00000	0.00000	0.00000
	B	A	0.02433	0.05282	0.51002
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.03778	0.06728	0.49771

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, Temp 100.00

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	1.68182
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	684933.00000	1369870.00000
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
	0.00067	0.24116	3.23692

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
	11.91610	11.33860	3.75299