sky130_osu_sc_18T_ms_TT_1P8_25C.ccs Library

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

SKY130_OSU_SC_18T_MS__ADDFx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__addf_1	46.88640
sky130_osu_sc_18T_ms__addf_l	46.88640

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	**B**	**CI**	**CO**	**CON**	**S**
sky130_osu_sc_18T_ms__addf_1	0.02117	0.02114	0.01610	0.22002	0.08848	0.21160
sky130_osu_sc_18T_ms__addf_l	0.02116	0.02113	0.01608	0.14945	0.08980	0.14857

Leakage Information

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

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.14018	0.45470	2.08438
	B->CO (RR)	0.11999	0.42086	1.97103
	CI->CO (RR)	0.13340	0.45519	2.11819
	CON->CO (FR)	0.02565	0.15694	0.80257
sky130_osu_sc_18T_ms__addf_l	A->CO (RR)	0.14180	0.42845	1.70241
	B->CO (RR)	0.13460	0.40800	1.62183
	CI->CO (RR)	0.13499	0.42898	1.73717
	CON->CO (FR)	0.02905	0.17115	0.80478

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)	0.17833	0.55689	2.50704
	B->CO (FF)	0.15896	0.52426	2.39030
	CI->CO (FF)	0.15530	0.53196	2.48997
	CON->CO (RF)	0.02419	0.14641	0.75157
sky130_osu_sc_18T_ms__addf_l	A->CO (FF)	0.17524	0.50914	1.97598
	B->CO (FF)	0.15659	0.48057	1.89295
	CI->CO (FF)	0.15213	0.48400	1.96090
	CON->CO (RF)	0.02601	0.15132	0.71076

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)	0.13039	0.26893	0.79007
	B->CON (FR)	0.11126	0.24017	0.75090
	CI->CON (FR)	0.10730	0.24385	0.77898
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.12389	0.26336	0.78984
	B->CON (FR)	0.10530	0.23499	0.75067
	CI->CON (FR)	0.10077	0.23833	0.77874

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)	0.09286	0.19764	0.59667
	B->CON (RF)	0.08783	0.19206	0.59913
	CI->CON (RF)	0.08605	0.19833	0.63513
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.08929	0.19474	0.59771
	B->CON (RF)	0.08464	0.18950	0.59998
	CI->CON (RF)	0.08246	0.19542	0.63606

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)	0.25920	0.59314	2.12635
	B->S (-R)	0.27147	0.60405	2.10572
	CI->S (-R)	0.23439	0.56588	2.10520
	CON->S (RR)	0.07827	0.20715	0.70639
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.24900	0.54898	1.77933
	B->S (-R)	0.26154	0.56215	1.77939
	CI->S (-R)	0.24221	0.54169	1.76316
	CON->S (RR)	0.07850	0.21358	0.69203

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)	0.22802	0.52798	1.83559
	B->S (-F)	0.22274	0.50112	1.75142
	CI->S (-F)	0.22037	0.52636	1.86609
	CON->S (FF)	0.09276	0.23368	0.75303
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.21742	0.48589	1.52495
	B->S (-F)	0.21195	0.46153	1.46385
	CI->S (-F)	0.20963	0.48437	1.55708
	CON->S (FF)	0.09029	0.23255	0.71517

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	0.00478	0.00468	0.00554
	B	0.00641	0.00641	0.00741
	CI	0.00669	0.00699	0.00849
sky130_osu_sc_18T_ms__addf_l	A	0.00373	0.00350	0.00392
	B	0.00536	0.00520	0.00569
	CI	0.00562	0.00578	0.00662

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01872	0.01886	0.01974
	B	0.01851	0.01891	0.01981
	CI	0.01622	0.01684	0.01792
sky130_osu_sc_18T_ms__addf_l	A	0.01769	0.01776	0.01816
	B	0.01745	0.01774	0.01823
	CI	0.01514	0.01566	0.01635

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01870	0.01873	0.01893
	B	0.01846	0.01866	0.01887
	CI	0.01618	0.01655	0.01705
sky130_osu_sc_18T_ms__addf_l	A	0.01767	0.01768	0.01783
	B	0.01741	0.01760	0.01779
	CI	0.01512	0.01549	0.01597

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00470	0.00449	0.00473
	B	0.00632	0.00617	0.00640
	CI	0.00666	0.00679	0.00732
sky130_osu_sc_18T_ms__addf_l	A	0.00366	0.00341	0.00357
	B	0.00528	0.00507	0.00524
	CI	0.00560	0.00571	0.00616

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01871	0.01885	0.01964
	B	0.01850	0.01888	0.01972
	CI	0.01621	0.01682	0.01783
sky130_osu_sc_18T_ms__addf_l	A	0.01768	0.01776	0.01818
	B	0.01744	0.01774	0.01821
	CI	0.01514	0.01565	0.01634

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.03954	0.03979	0.03995
	B	0.03501	0.03452	0.03597
	CI	0.03192	0.03175	0.03208
sky130_osu_sc_18T_ms__addf_l	A	0.03816	0.03820	0.03840
	B	0.03364	0.03310	0.03475
	CI	0.03058	0.03037	0.03061

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__addh_1	27.83880
sky130_osu_sc_18T_ms__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_ms__addh_1	0.01037	0.01135	0.21484	0.10035	0.21923
sky130_osu_sc_18T_ms__addh_l	0.01037	0.01135	0.12810	0.10195	0.12963

Leakage Information

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

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->CO (RR)	0.09266	0.22220	0.71989
	B->CO (RR)	0.09662	0.22119	0.71609
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.09295	0.23094	0.69860
	B->CO (RR)	0.09694	0.23044	0.69663

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)	0.07914	0.21105	0.72327
	B->CO (FF)	0.08504	0.21856	0.73714
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.07913	0.21553	0.67769
	B->CO (FF)	0.08485	0.22276	0.69182

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	0.12643	0.21746	0.48617
	A->CON (FR)	!B	0.07042	0.20763	0.76105
	B->CON (RR)	A	0.13023	0.21634	0.48148
	B->CON (FR)	!A	0.08887	0.22822	0.77656
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.11354	0.20369	0.46558
	A->CON (FR)	!B	0.06268	0.20036	0.75947
	B->CON (RR)	A	0.11736	0.20292	0.46304
	B->CON (FR)	!A	0.08111	0.22090	0.77495

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	0.12391	0.24298	0.62480
	A->CON (RF)	!B	0.05434	0.16848	0.62770
	B->CON (FF)	A	0.12221	0.24965	0.66002
	B->CON (RF)	!A	0.06453	0.17415	0.61240
sky130_osu_sc_18T_ms__addh_1	A->CON (FF)	B	0.11248	0.22884	0.59845
	A->CON (RF)	!B	0.05008	0.16455	0.62807
	B->CON (FF)	A	0.11071	0.23573	0.63412
	B->CON (RF)	!A	0.06039	0.17007	0.61279

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	0.09772	0.40710	2.01880
	A->S (FR)	B	0.16761	0.47648	1.99340
	B->S (RR)	!A	0.10794	0.40286	1.93199
	B->S (FR)	A	0.16643	0.49336	2.09900
	CON->S (FR)	-	0.02892	0.16363	0.82649
sky130_osu_sc_18T_ms__addh_1	A->S (RR)	!B	0.09698	0.36967	1.53697
	A->S (FR)	B	0.15985	0.43092	1.49509
	B->S (RR)	!A	0.10743	0.36935	1.48644
	B->S (FR)	A	0.15851	0.44400	1.56579
	CON->S (FR)	-	0.03254	0.18090	0.81956

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__addh_1	A->S (FF)	!B	0.11082	0.45697	2.27404
	A->S (RF)	B	0.16131	0.40288	1.56230
	B->S (FF)	!A	0.12928	0.47801	2.29595
	B->S (RF)	A	0.16503	0.40166	1.55628
	CON->S (RF)	-	0.02264	0.14113	0.72713
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.10675	0.40231	1.67184
	A->S (RF)	B	0.15110	0.36473	1.17745
	B->S (FF)	!A	0.12526	0.42311	1.69014
	B->S (RF)	A	0.15490	0.36394	1.17511
	CON->S (RF)	-	0.02574	0.15200	0.69503

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	0.00799	0.00779	0.00786
	B	0.00000	0.00000	0.00000
	B	0.00715	0.00693	0.00683
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00653	0.00622	0.00641
	B	0.00000	0.00000	0.00000
	B	0.00569	0.00537	0.00538

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	0.01263	0.01229	0.01287
	B	0.00000	0.00000	0.00000
	B	0.01310	0.01328	0.01416
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01115	0.01078	0.01132
	B	0.00000	0.00000	0.00000
	B	0.01164	0.01169	0.01244

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	0.00798	0.00776	0.00791
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01106	0.01112	0.01146
	B	A	0.00000	0.00000	0.00000
	B	A	0.00714	0.00690	0.00689
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01244	0.01241	0.01252
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00652	0.00621	0.00638
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01009	0.01012	0.01041
	B	A	0.00000	0.00000	0.00000
	B	A	0.00568	0.00535	0.00536
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01147	0.01141	0.01147

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	0.01262	0.01231	0.01287
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00158	0.00154	0.00176
	B	A	0.00000	0.00000	0.00000
	B	A	0.01311	0.01322	0.01404
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00284	0.00274	0.00290
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01116	0.01077	0.01132
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00031	0.00024	0.00035
	B	A	0.00000	0.00000	0.00000
	B	A	0.01164	0.01167	0.01241
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00159	0.00143	0.00150

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	0.01263	0.01232	0.01304
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00160	0.00166	0.00216
	B	A	0.00000	0.00000	0.00000
	B	A	0.01311	0.01331	0.01437
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00289	0.00284	0.00319
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01116	0.01078	0.01138
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00032	0.00026	0.00040
	B	A	0.00000	0.00000	0.00000
	B	A	0.01164	0.01170	0.01252
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00161	0.00144	0.00153

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	0.00799	0.00778	0.00790
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01107	0.01124	0.01162
	B	A	0.00000	0.00000	0.00000
	B	A	0.00716	0.00693	0.00685
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01246	0.01253	0.01277
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00653	0.00622	0.00643
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01010	0.01013	0.01039
	B	A	0.00000	0.00000	0.00000
	B	A	0.00569	0.00535	0.00537
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01148	0.01144	0.01153

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__and2_1	0.00558	0.00568	0.21826
sky130_osu_sc_18T_ms__and2_2	0.00558	0.00568	0.41752
sky130_osu_sc_18T_ms__and2_4	0.00558	0.00568	0.79350
sky130_osu_sc_18T_ms__and2_6	0.00336	0.00338	1.80000
sky130_osu_sc_18T_ms__and2_8	0.00557	0.00569	1.45947
sky130_osu_sc_18T_ms__and2_l	0.00432	0.00442	0.14807

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__and2_1	A->Y (RR)	0.07072	0.18922	0.65725
	B->Y (RR)	0.07562	0.19023	0.65926
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.08205	0.19657	0.70171
	B->Y (RR)	0.08692	0.19624	0.69803
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.11294	0.23019	0.79352
	B->Y (RR)	0.11783	0.22962	0.78231
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.17277	0.29507	0.92357
	B->Y (RR)	0.17764	0.29548	0.90286
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.07903	0.20747	0.66082
	B->Y (RR)	0.08424	0.20825	0.66248

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)	0.06179	0.18244	0.65052
	B->Y (FF)	0.06531	0.18785	0.66434
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.06978	0.18514	0.68374
	B->Y (FF)	0.07402	0.19026	0.69650
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.09497	0.21001	0.76015
	B->Y (FF)	0.09926	0.21510	0.76982
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.14926	0.26678	0.86100
	B->Y (FF)	0.15356	0.27094	0.86783
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.06718	0.19617	0.64617
	B->Y (FF)	0.07171	0.20272	0.66225

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	0.00586	0.00535	0.00656
	B	0.00000	0.00000	0.00000
	B	0.00598	0.00520	0.00577
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01207	0.01186	0.01292
	B	0.00000	0.00000	0.00000
	B	0.01217	0.01181	0.01232
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02570	0.02597	0.02708
	B	0.00000	0.00000	0.00000
	B	0.02584	0.02577	0.02674
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.05602	0.05388	0.05588
	B	0.00000	0.00000	0.00000
	B	0.05623	0.05394	0.05556
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00433	0.00391	0.00475
	B	0.00000	0.00000	0.00000
	B	0.00445	0.00381	0.00420

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	0.01516	0.01544	0.01801
	B	0.00000	0.00000	0.00000
	B	0.01704	0.01710	0.01941
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01930	0.02031	0.02276
	B	0.00000	0.00000	0.00000
	B	0.02122	0.02166	0.02394
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.03010	0.03174	0.03464
	B	0.00000	0.00000	0.00000
	B	0.03196	0.03273	0.03541
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.05337	0.05313	0.05869
	B	0.00000	0.00000	0.00000
	B	0.05527	0.05414	0.05817
sky130_osu_sc_18T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.01176	0.01184	0.01345
	B	0.00000	0.00000	0.00000
	B	0.01317	0.01309	0.01458

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)	-0.00588	-0.00587	-0.00587
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00586	-0.00587	-0.00587
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00586	-0.00587	-0.00587
sky130_osu_sc_18T_ms__and2_6	B	0.00000	0.00000	0.00000
	B	-0.00047	-0.00047	-0.00047
	!B	0.00000	0.00000	0.00000
	!B	-0.00039	-0.00039	-0.00039
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00586	-0.00587	-0.00587
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00433	-0.00433	-0.00433

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00588	0.00591	0.00587
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00586	0.00591	0.00587
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00586	0.00591	0.00587
sky130_osu_sc_18T_ms__and2_6	B	0.00000	0.00000	0.00000
	B	0.00047	0.00047	0.00047
	!B	0.00000	0.00000	0.00000
	!B	0.00039	0.00039	0.00039
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00586	0.00591	0.00587
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00433	0.00436	0.00433

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00554	-0.00553	-0.00554
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00554	-0.00553	-0.00554
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00554	-0.00554	-0.00554
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	-0.00047	-0.00047	-0.00047
	!A	0.00000	0.00000	0.00000
	!A	-0.00039	-0.00039	-0.00039
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00554	-0.00554	-0.00553
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00409	-0.00408	-0.00408

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)	0.00554	0.00553	0.00554
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00554	0.00553	0.00554
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00554	0.00554	0.00554
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.00047	0.00047	0.00047
	!A	0.00000	0.00000	0.00000
	!A	0.00039	0.00039	0.00039
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00554	0.00554	0.00554
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00409	0.00408	0.00408

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ms__aoi21_l	0.00530	0.00549	0.00532	0.09791

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi21_l	A0->Y (FR)	0.07147	0.21671	0.77710
	A1->Y (FR)	0.06107	0.19991	0.74109
	B0->Y (FR)	0.05140	0.19432	0.76800

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)	0.05084	0.15582	0.56327
	A1->Y (RF)	0.04615	0.15539	0.58848
	B0->Y (RF)	0.03072	0.13790	0.56986

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	0.01376	0.01363	0.01366
	A1	0.00000	0.00000	0.00000
	A1	0.01165	0.01149	0.01153
	B0	0.01057	0.01047	0.01089

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	0.00259	0.00216	0.00207
	A1	0.00000	0.00000	0.00000
	A1	0.00263	0.00221	0.00219
	B0	-0.00141	-0.00144	-0.00133

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)	-0.00483	-0.00512	-0.00515
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00524	-0.00526	-0.00524
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00525	-0.00526	-0.00524

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00515	0.00519	0.00515
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00524	0.00528	0.00524
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00525	0.00528	0.00524

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)	-0.00479	-0.00506	-0.00510
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00518	-0.00518	-0.00518
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00562	-0.00562	-0.00562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00510	0.00509	0.00510
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00518	0.00518	0.00519
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00562	0.00562	0.00562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00242	-0.00241	-0.00242

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)	0.00247	0.00247	0.00245

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__aoi22_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	0.00530	0.00550	0.00568	0.00545	0.09401

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__aoi22_1	0.00000	0.13594	0.53779

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__aoi22_l	A0->Y (FR)	0.09061	0.23810	0.79233
	A1->Y (FR)	0.08048	0.22422	0.76886
	B0->Y (FR)	0.05375	0.19424	0.75319
	B1->Y (FR)	0.06404	0.20810	0.78113

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)	0.06715	0.17062	0.56915
	A1->Y (RF)	0.06245	0.17046	0.59418
	B0->Y (RF)	0.03369	0.13952	0.56095
	B1->Y (RF)	0.03848	0.13980	0.53529

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	0.01690	0.01675	0.01673
	A1	0.01481	0.01463	0.01463
	B0	0.01129	0.01114	0.01165
	B1	0.01331	0.01319	0.01369

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00563	0.00519	0.00501
	A1	0.00569	0.00523	0.00513
	B0	-0.00098	-0.00102	-0.00089
	B1	-0.00088	-0.00100	-0.00095

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)	-0.00488	-0.00510	-0.00515
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00524	-0.00526	-0.00524
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00524	-0.00526	-0.00524
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00524	-0.00526	-0.00524

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00515	0.00519	0.00515
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00524	0.00528	0.00524
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00525	0.00527	0.00524
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00525	0.00527	0.00524

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)	-0.00483	-0.00506	-0.00510
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00518	-0.00518	-0.00518
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00562	-0.00561	-0.00562
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00562	-0.00561	-0.00562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00510	0.00509	0.00510
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00518	0.00518	0.00519
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00562	0.00561	0.00562
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00562	0.00561	0.00562

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00243	-0.00243	-0.00243
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00243	-0.00243	-0.00243
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00575	-0.00575	-0.00575
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00575	-0.00575	-0.00575

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)	0.00250	0.00249	0.00247
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00243	0.00243	0.00243
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00575	0.00575	0.00575
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00575	0.00575	0.00575

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00244	-0.00246	-0.00244
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00244	-0.00244	-0.00244
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00532	-0.00531	-0.00531
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00532	-0.00531	-0.00531

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)	0.00251	0.00251	0.00248
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00244	0.00244	0.00244
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00532	0.00531	0.00531
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00532	0.00531	0.00531

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ms__buf_1	0.00568	0.21656
sky130_osu_sc_18T_ms__buf_2	0.00568	0.41938
sky130_osu_sc_18T_ms__buf_4	0.00567	0.80919
sky130_osu_sc_18T_ms__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00569	1.52137
sky130_osu_sc_18T_ms__buf_l	0.00445	0.14987

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__buf_1	**A->Y (RR)**	0.05531	0.16947	0.62398
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.06212	0.17071	0.66109
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.08378	0.19461	0.74192
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.12492	0.23988	0.85183
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.06185	0.18674	0.63144

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)**	0.05882	0.17760	0.63926
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.06752	0.18235	0.68166
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.09280	0.20810	0.76378
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.14688	0.26498	0.87412
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.06490	0.19329	0.64485

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00546	0.00487	0.00616
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01162	0.01142	0.01250
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02497	0.02552	0.02659
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.05308	0.05318	0.05539
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00416	0.00368	0.00457

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	0.01455	0.01472	0.01733
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01867	0.01937	0.02182
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02945	0.03052	0.03330
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.05293	0.05199	0.05645
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01139	0.01138	0.01305

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
	-0.00076	-0.00076	-0.00076

Passive power(pJ) for A falling :

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

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dffr_1	63.73620
sky130_osu_sc_18T_ms__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_ms__dffr_1	0.00546	0.00542	0.01559	0.20904	0.20382
sky130_osu_sc_18T_ms__dffr_l	0.00546	0.00542	0.01558	0.14925	0.14728

Leakage Information

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

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffr_1	CK->Q (RR)	0.26412	0.50819	1.56550
	QN->Q (FR)	0.03012	0.17697	0.89621
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.26068	0.52134	1.53264
	QN->Q (FR)	0.03204	0.18614	0.87579

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)	0.27040	0.50974	1.60641
	QN->Q (RF)	0.02801	0.16932	0.85732
	RN->Q (FF)	0.20148	0.45473	1.60779
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.27408	0.53364	1.58963
	QN->Q (RF)	0.02868	0.17031	0.80163
	RN->Q (FF)	0.20553	0.47916	1.59073

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)	0.23673	0.35826	0.81340
	RN->QN (FR)	0.16781	0.30272	0.81523
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.23695	0.36724	0.81875
	RN->QN (FR)	0.16834	0.31228	0.82036

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)**	0.22564	0.35313	0.77723
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.21791	0.34817	0.74951

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)	-0.06217	-0.06119	-0.09139
	setup	CK (R)	0.21068	0.20240	0.29496
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06240	-0.06130	-0.09127
	setup	CK (R)	0.21084	0.20273	0.29554

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)	-0.10303	-0.16344	-0.45216
	setup	CK (R)	0.13358	0.17600	0.46891
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.10476	-0.16403	-0.45347
	setup	CK (R)	0.13358	0.17600	0.46891

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)	-0.06217	-0.06119	-0.09139
	setup	CK (R)	0.21068	0.20240	0.29496
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06240	-0.06130	-0.09127
	setup	CK (R)	0.21084	0.20273	0.29554

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)	-0.10303	-0.16344	-0.45216
	setup	CK (R)	0.13358	0.17600	0.46891
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.10476	-0.16403	-0.45347
	setup	CK (R)	0.13358	0.17600	0.46891

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)	0.17145	0.16858	0.25621
	removal	CK (R)	-0.03201	-0.03616	-0.04411
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.17186	0.16900	0.25661
	removal	CK (R)	-0.03201	-0.03616	-0.04411

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)	0.17145	0.16858	0.25621
	removal	CK (R)	-0.03201	-0.03616	-0.04411
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.17186	0.16900	0.25661
	removal	CK (R)	-0.03201	-0.03616	-0.04411

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 ()	0.11636	0.15425	0.97290
	min_pulse_width	RN ()	0.11636	0.15425	0.97290
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.11401	0.15099	0.97290
	min_pulse_width	RN ()	0.11401	0.15099	0.97290

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 ()	0.12169	0.14772	0.97290
	min_pulse_width	CK ()	0.14120	0.14120	0.97290
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.11459	0.14120	0.97290
	min_pulse_width	CK ()	0.13794	0.13794	0.97290

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 ()	0.26451	0.26840	0.97290
	min_pulse_width	CK ()	0.10933	0.14446	0.97290
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.26772	0.27166	0.97290
	min_pulse_width	CK ()	0.10933	0.14446	0.97290

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	0.01445	0.01303	0.00917
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01280	0.01161	0.01005

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	0.01673	0.01579	0.01296
	RN	-0.00192	-0.02821	-0.16932
	RN	0.03899	0.03841	0.03589
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01507	0.01432	0.01310
	RN	-0.00192	-0.02304	-0.12089
	RN	0.03732	0.03692	0.03606

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	0.01672	0.01579	0.01302
	RN	-0.00192	-0.02778	-0.16506
	RN	0.03897	0.03840	0.03592
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01507	0.01432	0.01315
	RN	-0.00192	-0.02286	-0.11928
	RN	0.03730	0.03691	0.03606

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	0.01440	0.01301	0.00923
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01275	0.01157	0.01000

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	-0.00461	-0.00508	-0.00512
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01780	0.01709	0.01702
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00800	0.00734	0.00741
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00461	-0.00508	-0.00512
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01780	0.01709	0.01702
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00800	0.00734	0.00741

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	0.00513	0.00513	0.00513
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03066	0.03031	0.03043
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01431	0.01401	0.01431
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00513	0.00513	0.00513
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03066	0.03031	0.03043
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01431	0.01401	0.01431

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)	0.00554	0.00489	0.00600
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01581	0.01494	0.01583
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)	0.00554	0.00489	0.00600
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01581	0.01494	0.01583

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)	0.01347	0.01324	0.01576
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02922	0.02876	0.03083
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)	0.01347	0.01324	0.01576
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02922	0.02876	0.03083

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)	-0.00142	-0.00218	-0.00119
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00844	0.00716	0.00759
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00196	-0.00268	-0.00163
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00142	-0.00218	-0.00119
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00844	0.00716	0.00759
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00196	-0.00268	-0.00163

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)	0.02080	0.02057	0.02317
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04614	0.04516	0.04645
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03544	0.03485	0.03659
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04526	0.04450	0.04902
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02410	0.02391	0.02623
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02080	0.02057	0.02317
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04614	0.04516	0.04645
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03544	0.03485	0.03659
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04526	0.04450	0.04902
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02410	0.02391	0.02623

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dffsr_1	69.59700
sky130_osu_sc_18T_ms__dffsr_l	69.59700

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	RN	SN	CK	Q	QN
sky130_osu_sc_18T_ms__dffsr_1	0.00542	0.00543	0.01155	0.01591	0.22008	0.21503
sky130_osu_sc_18T_ms__dffsr_l	0.00542	0.00543	0.01154	0.01591	0.14961	0.14559

Leakage Information

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

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffsr_1	CK->Q (RR)	0.27159	0.51298	1.58351
	QN->Q (FR)	0.02856	0.17236	0.88419
	RN->Q (RR)	0.21766	0.46346	1.54182
	SN->Q (FR)	0.19902	0.44971	1.60991
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.27567	0.53687	1.55677
	QN->Q (FR)	0.03196	0.18585	0.87433
	RN->Q (RR)	0.22231	0.48800	1.51593
	SN->Q (FR)	0.20356	0.47399	1.57993

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)	0.30536	0.54519	1.65209
	QN->Q (RF)	0.02554	0.15912	0.81751
	RN->Q (FF)	0.20584	0.45652	1.62659
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.31331	0.57590	1.63447
	QN->Q (RF)	0.02862	0.17017	0.80174
	RN->Q (FF)	0.21365	0.48763	1.60910

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)	0.27268	0.39716	0.86134
	RN->QN (FR)	0.17357	0.30855	0.83657
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.27563	0.40817	0.85607
	RN->QN (FR)	0.17639	0.31979	0.83103

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)	0.23538	0.36143	0.79324
	RN->QN (RF)	0.18183	0.31176	0.75135
	SN->QN (FF)	0.16318	0.29798	0.81979
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.23371	0.36356	0.76736
	RN->QN (RF)	0.18065	0.31474	0.72670
	SN->QN (FF)	0.16191	0.30078	0.79027

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)	-0.06509	-0.06773	-0.09992
	setup	CK (R)	0.20946	0.20200	0.29294
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.06748	-0.06830	-0.10084
	setup	CK (R)	0.21005	0.20200	0.29165

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)	-0.11783	-0.17470	-0.47667
	setup	CK (R)	0.15212	0.18870	0.49317
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.11850	-0.17311	-0.47837
	setup	CK (R)	0.15206	0.18847	0.49328

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)	-0.06509	-0.06773	-0.09992
	setup	CK (R)	0.20946	0.20200	0.29294
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.06748	-0.06830	-0.10084
	setup	CK (R)	0.21005	0.20200	0.29165

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)	-0.11783	-0.17470	-0.47667
	setup	CK (R)	0.15212	0.18870	0.49317
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.11850	-0.17311	-0.47837
	setup	CK (R)	0.15206	0.18847	0.49328

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)	0.15360	0.15139	0.23485
	removal	CK (R)	-0.01936	-0.01938	-0.02586
	hold	SN (R)	-0.15300	-0.19234	-0.41993
	setup	SN (R)	0.17683	0.21505	0.55048
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.15211	0.15068	0.23567
	removal	CK (R)	-0.01936	-0.01938	-0.02586
	hold	SN (R)	-0.15274	-0.18981	-0.41186
	setup	SN (R)	0.17683	0.21505	0.54128

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)	0.15360	0.15139	0.23485
	removal	CK (R)	-0.01936	-0.01938	-0.02586
	hold	SN (R)	-0.15300	-0.19234	-0.42048
	hold	SN (R)	-0.15597	-0.19503	-0.41993
	setup	SN (R)	0.17683	0.21505	0.55044
	setup	SN (R)	0.17388	0.21242	0.55048
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.15211	0.15068	0.23567
	removal	CK (R)	-0.01936	-0.01938	-0.02586
	hold	SN (R)	-0.15274	-0.18981	-0.41186
	hold	SN (R)	-0.15335	-0.19000	-0.41322
	setup	SN (R)	0.17683	0.21505	0.53543
	setup	SN (R)	0.16873	0.20467	0.54128

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 ()	0.13468	0.16403	0.97290
	min_pulse_width	RN ()	0.13468	0.16403	0.97290
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.13468	0.16403	0.97290
	min_pulse_width	RN ()	0.13208	0.16077	0.97290

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)	0.04110	0.04869	0.12448
	removal	CK (R)	-0.01652	-0.03069	-0.08959
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.04136	0.04796	0.12180
	removal	CK (R)	-0.01652	-0.03069	-0.08959

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)	0.04110	0.04869	0.12448
	removal	CK (R)	-0.01652	-0.03069	-0.08959
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.04136	0.04796	0.12180
	removal	CK (R)	-0.01652	-0.03069	-0.08959

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 ()	0.15790	0.19665	0.97290
	min_pulse_width	SN ()	0.15514	0.19665	0.97290
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.15790	0.19665	0.97290
	min_pulse_width	SN ()	0.14764	0.18686	0.97290

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 ()	0.12494	0.14446	0.97290
	min_pulse_width	CK ()	0.15572	0.15099	0.97290
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.12104	0.14446	0.97290
	min_pulse_width	CK ()	0.15335	0.15099	0.97290

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 ()	0.26451	0.26840	0.97290
	min_pulse_width	CK ()	0.12987	0.16077	0.97290
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.26451	0.26840	0.97290
	min_pulse_width	CK ()	0.12987	0.16077	0.97290

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	0.01823	0.01723	0.01484
	RN	0.03372	0.03308	0.02998
	SN	-0.00192	-0.02909	-0.17826
	SN	0.03786	0.03718	0.03349
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01672	0.01560	0.01391
	RN	0.03220	0.03145	0.02909
	SN	-0.00192	-0.02308	-0.12119
	SN	0.03633	0.03555	0.03261

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	0.01935	0.01859	0.01621
	RN	-0.00192	-0.02909	-0.17826
	RN	0.03995	0.03949	0.03719
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01784	0.01717	0.01606
	RN	-0.00192	-0.02308	-0.12119
	RN	0.03841	0.03804	0.03705

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	0.01933	0.01857	0.01622
	RN	-0.00192	-0.02869	-0.17416
	RN	0.03992	0.03948	0.03724
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01782	0.01716	0.01605
	RN	-0.00192	-0.02270	-0.11792
	RN	0.03839	0.03803	0.03703

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	0.01817	0.01718	0.01482
	RN	0.03367	0.03304	0.03004
	SN	-0.00192	-0.02869	-0.17415
	SN	0.03781	0.03714	0.03353
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01666	0.01556	0.01389
	RN	0.03214	0.03141	0.02916
	SN	-0.00192	-0.02270	-0.11791
	SN	0.03628	0.03551	0.03263

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	-0.00494	-0.00511	-0.00512
	(!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)	0.02305	0.02236	0.02226
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00901	0.00838	0.00842
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00899	0.00837	0.00842
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00907	0.00844	0.00848
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00494	-0.00511	-0.00512
	(!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)	0.02305	0.02236	0.02226
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00901	0.00838	0.00842
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00899	0.00837	0.00842
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00907	0.00844	0.00848

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	0.00511	0.00513	0.00512
	(!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)	0.03467	0.03430	0.03420
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01515	0.01489	0.01519
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01520	0.01494	0.01520
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01509	0.01483	0.01513
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00511	0.00513	0.00512
	(!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)	0.03466	0.03429	0.03419
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01514	0.01488	0.01518
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01519	0.01493	0.01519
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01508	0.01482	0.01512

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)	0.00411	0.00346	0.00448
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01855	0.01766	0.01840
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)	0.00411	0.00346	0.00449
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01856	0.01766	0.01841

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)	0.01450	0.01432	0.01692
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03087	0.03035	0.03235
sky130_osu_sc_18T_ms__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.01449	0.01430	0.01691
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03086	0.03034	0.03234

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)	-0.01166	-0.01166	-0.01165
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01157	-0.01190	-0.01192
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01133	-0.01147	-0.01149
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00753	0.00686	0.00695
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)	-0.01166	-0.01166	-0.01165
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01155	-0.01188	-0.01190
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01133	-0.01146	-0.01148
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00754	0.00687	0.00696

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)	0.01166	0.01166	0.01165
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01192	0.01190	0.01192
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01149	0.01147	0.01149
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02393	0.02350	0.02357
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)	0.01166	0.01166	0.01165
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01190	0.01188	0.01190
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01149	0.01146	0.01148
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02391	0.02349	0.02356

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)	-0.00142	-0.00218	-0.00119
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00958	0.00837	0.00877
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00948	0.00828	0.00873
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00171	-0.00243	-0.00138
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00610	0.00456	0.00644
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00142	-0.00218	-0.00120
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00957	0.00836	0.00876
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00947	0.00827	0.00871
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00171	-0.00243	-0.00138
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00610	0.00456	0.00644

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)	0.05148	0.05054	0.05179
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02086	0.02062	0.02323
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03613	0.03559	0.03737
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03620	0.03569	0.03742
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04924	0.04841	0.05252
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02389	0.02370	0.02602
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02794	0.02734	0.03206
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05148	0.05054	0.05179
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02086	0.02062	0.02323
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03613	0.03559	0.03737
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03620	0.03569	0.03742
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04923	0.04840	0.05251
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02389	0.02370	0.02602
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02793	0.02733	0.03205

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dffs_1	57.87540
sky130_osu_sc_18T_ms__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_ms__dffs_1	0.00545	0.00926	0.01570	0.21321	0.20468
sky130_osu_sc_18T_ms__dffs_l	0.00545	0.00926	0.01570	0.15078	0.14797

Leakage Information

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

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dffs_1	CK->Q (RR)	0.20416	0.43955	1.51395
	QN->Q (FR)	0.02994	0.17703	0.89916
	SN->Q (FR)	0.15530	0.41057	1.58823
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.20489	0.45717	1.47778
	QN->Q (FR)	0.03187	0.18581	0.87534
	SN->Q (FR)	0.15673	0.42869	1.54620

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)	0.29826	0.54497	1.66033
	QN->Q (RF)	0.02778	0.16924	0.86324
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.30055	0.56536	1.62988
	QN->Q (RF)	0.02850	0.17002	0.80334

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)	0.26336	0.39071	0.84688
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.26234	0.39753	0.85034

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)	0.16877	0.28587	0.70860
	SN->QN (FF)	0.11998	0.25665	0.78284
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.16531	0.28615	0.68767
	SN->QN (FF)	0.11684	0.25742	0.75576

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)	-0.04753	-0.04938	-0.07897
	setup	CK (R)	0.14650	0.14359	0.24045
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04599	-0.05161	-0.07782
	setup	CK (R)	0.14641	0.14339	0.24063

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)	-0.10767	-0.16368	-0.45367
	setup	CK (R)	0.14459	0.17732	0.47075
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.10643	-0.16189	-0.45299
	setup	CK (R)	0.14460	0.17730	0.47071

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)	-0.04753	-0.04938	-0.07897
	setup	CK (R)	0.14650	0.14359	0.24045
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04599	-0.05161	-0.07782
	setup	CK (R)	0.14641	0.14339	0.24063

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)	-0.10767	-0.16368	-0.45367
	setup	CK (R)	0.14459	0.17732	0.47075
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.10643	-0.16189	-0.45299
	setup	CK (R)	0.14460	0.17730	0.47071

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)	0.04247	0.04774	0.10947
	removal	CK (R)	-0.01797	-0.02975	-0.07969
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.04210	0.04770	0.11146
	removal	CK (R)	-0.01797	-0.02975	-0.07969

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)	0.04247	0.04774	0.10947
	removal	CK (R)	-0.01797	-0.02975	-0.07969
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.04210	0.04770	0.11146
	removal	CK (R)	-0.01797	-0.02975	-0.07969

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 ()	0.10212	0.17056	0.97290
	min_pulse_width	SN ()	0.10448	0.17056	0.97290
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.10265	0.16729	0.97290
	min_pulse_width	SN ()	0.09803	0.16729	0.97290

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 ()	0.08984	0.13794	0.97290
	min_pulse_width	CK ()	0.14772	0.14772	0.97290
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.08614	0.13794	0.97290
	min_pulse_width	CK ()	0.14446	0.14446	0.97290

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 ()	0.20375	0.20969	0.97290
	min_pulse_width	CK ()	0.12369	0.14772	0.97290
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.20375	0.20969	0.97290
	min_pulse_width	CK ()	0.12369	0.14772	0.97290

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	0.01444	0.01302	0.00914
	SN	-0.00192	-0.02854	-0.17270
	SN	0.03197	0.03080	0.02634
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01279	0.01159	0.01009
	SN	-0.00192	-0.02318	-0.12213
	SN	0.03031	0.02938	0.02729

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	0.01660	0.01571	0.01303
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01494	0.01423	0.01314

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	0.01659	0.01573	0.01314
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01494	0.01423	0.01317

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	0.01438	0.01299	0.00934
	SN	-0.00192	-0.02785	-0.16575
	SN	0.03192	0.03078	0.02645
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01274	0.01155	0.01008
	SN	-0.00192	-0.02292	-0.11983
	SN	0.03026	0.02934	0.02721

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	-0.00500	-0.00516	-0.00517
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01704	0.01631	0.01622
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00777	0.00712	0.00721
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00500	-0.00516	-0.00517
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01704	0.01631	0.01622
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00777	0.00712	0.00721

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	0.00517	0.00517	0.00517
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02968	0.02930	0.02941
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01455	0.01427	0.01459
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00517	0.00517	0.00517
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02968	0.02930	0.02941
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01455	0.01427	0.01459

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)	-0.00863	-0.00864	-0.00864
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00615	0.00562	0.00603
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)	-0.00862	-0.00864	-0.00864
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00615	0.00562	0.00603

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)	0.00863	0.00864	0.00865
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01646	0.01606	0.01704
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)	0.00863	0.00864	0.00865
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01646	0.01606	0.01704

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)	-0.00145	-0.00220	-0.00124
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00185	-0.00257	-0.00151
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00480	0.00327	0.00533
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00145	-0.00220	-0.00124
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00185	-0.00257	-0.00151
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00480	0.00327	0.00533

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)	0.04535	0.04439	0.04570
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02081	0.02058	0.02319
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04416	0.04328	0.04771
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02396	0.02377	0.02610
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02723	0.02669	0.03150
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.04535	0.04439	0.04570
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02081	0.02058	0.02319
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04416	0.04328	0.04771
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02396	0.02377	0.02610
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02723	0.02669	0.03150

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__dff_1	48.35160
sky130_osu_sc_18T_ms__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_ms__dff_1	0.00560	0.01553	0.22429	0.21601
sky130_osu_sc_18T_ms__dff_l	0.00560	0.01553	0.14731	0.14300

Leakage Information

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

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__dff_1	CK->Q (RR)	0.18213	0.41273	1.49854
	QN->Q (FR)	0.02835	0.17227	0.88975
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.18917	0.43795	1.44429
	QN->Q (FR)	0.03251	0.18730	0.87933

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)	0.25212	0.48892	1.61255
	QN->Q (RF)	0.02541	0.15932	0.82391
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.26155	0.51998	1.56824
	QN->Q (RF)	0.02856	0.16870	0.79233

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)	0.22055	0.33973	0.80214
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.22467	0.35308	0.79663

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)	0.14911	0.26229	0.69018
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.15004	0.26725	0.66031

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)	-0.04560	-0.04884	-0.07582
	setup	CK (R)	0.12369	0.12168	0.22562
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.04584	-0.04884	-0.07782
	setup	CK (R)	0.12360	0.11871	0.22451

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)	-0.09872	-0.16153	-0.45141
	setup	CK (R)	0.12090	0.17175	0.46702
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.09903	-0.16153	-0.45193
	setup	CK (R)	0.12078	0.17175	0.46702

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 ()	0.08244	0.13794	0.97290
	min_pulse_width	CK ()	0.13424	0.13794	0.97290
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.07874	0.13794	0.97290
	min_pulse_width	CK ()	0.13054	0.13794	0.97290

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 ()	0.18163	0.18686	0.97290
	min_pulse_width	CK ()	0.09177	0.14120	0.97290
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.17902	0.18686	0.97290
	min_pulse_width	CK ()	0.09177	0.14120	0.97290

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	0.01520	0.01406	0.01187
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01369	0.01247	0.01109

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	0.01692	0.01614	0.01383
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01544	0.01472	0.01347

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	0.01692	0.01615	0.01390
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01543	0.01470	0.01352

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	0.01514	0.01402	0.01196
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01363	0.01243	0.01111

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	-0.00462	-0.00508	-0.00511
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01590	0.01526	0.01537
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00462	-0.00508	-0.00511
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01591	0.01527	0.01538

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	0.00512	0.00512	0.00512
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03049	0.03008	0.03029
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00512	0.00512	0.00512
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03050	0.03009	0.03030

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)	-0.00145	-0.00220	-0.00124
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00184	-0.00255	-0.00149
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00145	-0.00220	-0.00124
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00184	-0.00255	-0.00149

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)	0.02074	0.02051	0.02312
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04431	0.04336	0.04476
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04480	0.04392	0.04853
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02387	0.02368	0.02601
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02074	0.02051	0.02312
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04432	0.04336	0.04477
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04480	0.04393	0.04853
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02387	0.02368	0.02601

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_ms__inv_1	0.00547	0.20935
sky130_osu_sc_18T_ms__inv_10	0.05118	1.80398
sky130_osu_sc_18T_ms__inv_2	0.01051	0.40428
sky130_osu_sc_18T_ms__inv_3	0.01568	0.58355
sky130_osu_sc_18T_ms__inv_4	0.02075	0.78295
sky130_osu_sc_18T_ms__inv_6	0.03106	1.13273
sky130_osu_sc_18T_ms__inv_8	0.04117	1.48666
sky130_osu_sc_18T_ms__inv_l	0.00421	0.14174

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__inv_1	**A->Y (FR)**	0.02666	0.15614	0.78621
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.04314	0.13254	0.80224
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.02255	0.13648	0.77671
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.02536	0.13233	0.78617
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.02658	0.12811	0.78588
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.03074	0.12541	0.78490
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.03657	0.12735	0.79256
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.03003	0.16994	0.78713

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)**	0.02273	0.13897	0.70387
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.03956	0.11491	0.69569
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.01950	0.12025	0.69230
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.02168	0.11579	0.69954
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.02214	0.11084	0.69912
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.02827	0.10926	0.69650
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.03375	0.11123	0.69955
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02536	0.14788	0.68697

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	0.00767	0.00790	0.00836
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.06746	0.07035	0.07685
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01380	0.01443	0.01558
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02113	0.02190	0.02375
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.02728	0.02852	0.03086
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.04048	0.04230	0.04624
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.05376	0.05589	0.06157
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00593	0.00601	0.00630

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	-0.00186	-0.00180	-0.00157
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	-0.02589	-0.02775	-0.02232
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00566	-0.00532	-0.00470
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00756	-0.00715	-0.00606
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	-0.01135	-0.01093	-0.00919
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	-0.01727	-0.01674	-0.01370
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	-0.02255	-0.02237	-0.01813
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00132	-0.00129	-0.00118

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_18T_ms__mux2_1	0.05870	0.05858	0.01110	0.05303

Leakage Information

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

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__mux2_1	A0->Y (RR)	-	0.01497	0.06961	0.24358
	A1->Y (RR)	-	0.01593	0.07012	0.24411
	S0->Y (RR)	(!A0 * A1)	0.04694	0.11268	0.25086
	S0->Y (FR)	(A0 * !A1)	0.04000	0.11942	0.33907

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)	-	0.01300	0.06740	0.24090
	A1->Y (FF)	-	0.01295	0.06700	0.23982
	S0->Y (FF)	(!A0 * A1)	0.05912	0.13167	0.31199
	S0->Y (RF)	(A0 * !A1)	0.02744	0.09840	0.28395

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00798	-0.00799	-0.00798
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00553	-0.00552	-0.00553
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00892	0.00883	0.01172
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00561	-0.00616	-0.00468

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00798	0.00800	0.00798
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00553	0.00553	0.00553
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00144	0.00091	0.00267
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02072	0.02054	0.02316

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)	-0.00201	-0.00200	-0.00200

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

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

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00237	-0.00236	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00237	0.00236	0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00212	-0.00265	-0.00094
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00207	-0.00265	-0.00100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01562	0.01545	0.01810
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01403	0.01397	0.01684

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__nand2_1	9.52380
sky130_osu_sc_18T_ms__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__nand2_1	0.00548	0.00545	0.17202
sky130_osu_sc_18T_ms__nand2_l	0.00422	0.00420	0.11988

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nand2_1	A->Y (FR)	0.02711	0.14912	0.71031
	B->Y (FR)	0.03208	0.15264	0.70724
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.03046	0.16225	0.72088
	B->Y (FR)	0.03650	0.16738	0.72321

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)	0.03154	0.16516	0.79164
	B->Y (RF)	0.03613	0.16523	0.77005
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.03577	0.17994	0.79075
	B->Y (RF)	0.04016	0.18024	0.76815

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	0.00817	0.00834	0.00880
	B	0.00000	0.00000	0.00000
	B	0.01031	0.01036	0.01075
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00627	0.00618	0.00661
	B	0.00000	0.00000	0.00000
	B	0.00784	0.00769	0.00806

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	-0.00134	-0.00137	-0.00122
	B	0.00000	0.00000	0.00000
	B	-0.00126	-0.00139	-0.00127
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00099	-0.00102	-0.00097
	B	0.00000	0.00000	0.00000
	B	-0.00095	-0.00104	-0.00099

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)	-0.00578	-0.00578	-0.00577
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00422	-0.00422	-0.00422

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)	0.00578	0.00582	0.00577
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00422	0.00425	0.00422

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00537	-0.00536	-0.00536
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00392	-0.00391	-0.00392

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00537	0.00536	0.00537
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00392	0.00391	0.00392

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__nor2_1	9.52380
sky130_osu_sc_18T_ms__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__nor2_1	0.00547	0.00579	0.10846
sky130_osu_sc_18T_ms__nor2_l	0.00414	0.00449	0.07482

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__nor2_1	A->Y (FR)	0.05370	0.19656	0.77412
	B->Y (FR)	0.04012	0.18102	0.76310
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.05985	0.21461	0.77497
	B->Y (FR)	0.04784	0.20195	0.77534

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)	0.03113	0.12622	0.50683
	B->Y (RF)	0.02426	0.11696	0.49476
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.03338	0.13206	0.49987
	B->Y (RF)	0.02694	0.12438	0.48873

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.01127	0.01117	0.01128
	B	0.00000	0.00000	0.00000
	B	0.00837	0.00839	0.00904
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00824	0.00813	0.00820
	B	0.00000	0.00000	0.00000
	B	0.00639	0.00635	0.00669

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	0.00096	0.00069	0.00073
	B	0.00000	0.00000	0.00000
	B	-0.00144	-0.00148	-0.00132
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00064	0.00047	0.00049
	B	0.00000	0.00000	0.00000
	B	-0.00096	-0.00101	-0.00092

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)	-0.00463	-0.00509	-0.00514
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00333	-0.00362	-0.00365

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)	0.00514	0.00513	0.00514
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00366	0.00369	0.00365

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

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

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)	0.00246	0.00246	0.00245
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00183	0.00183	0.00182

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_ms__oai21_l	0.00553	0.00559	0.00468	0.10482

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai21_l	A0->Y (FR)	0.05392	0.19419	0.76693
	A1->Y (FR)	0.07126	0.21371	0.78192
	B0->Y (FR)	0.03751	0.16184	0.67199

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)	0.04549	0.15704	0.60427
	A1->Y (RF)	0.05498	0.16507	0.60191
	B0->Y (RF)	0.03494	0.15364	0.63922

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	0.01138	0.01126	0.01174
	A1	0.00000	0.00000	0.00000
	A1	0.01427	0.01408	0.01413
	B0	0.00975	0.00972	0.01012

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	0.00019	-0.00005	-0.00001
	A1	0.00000	0.00000	0.00000
	A1	0.00259	0.00220	0.00214
	B0	0.00359	0.00343	0.00348

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00243	-0.00245	-0.00243
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00496	-0.00512	-0.00515
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00527	-0.00526	-0.00526

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)	0.00247	0.00248	0.00245
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00515	0.00519	0.00515
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00527	0.00529	0.00526

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)	-0.00456	-0.00501	-0.00506
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00496	-0.00511	-0.00513
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00521	-0.00521	-0.00521

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)	0.00506	0.00507	0.00507
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00513	0.00513	0.00513
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00521	0.00521	0.00522

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)	-0.00435	-0.00435	-0.00435

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

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

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__oai22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ms__oai22_1	0.00537	0.00564	0.00578	0.00565	0.10174

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__oai22_l	A0->Y (FR)	0.07725	0.21727	0.77116
	A1->Y (FR)	0.06366	0.20093	0.75969
	B0->Y (FR)	0.04552	0.18351	0.74303
	B1->Y (FR)	0.05941	0.19954	0.75428

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)	0.08048	0.19649	0.64346
	A1->Y (RF)	0.06319	0.17672	0.61733
	B0->Y (RF)	0.05295	0.17122	0.64955
	B1->Y (RF)	0.07152	0.19459	0.68698

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	0.01864	0.01845	0.01850
	A1	0.01573	0.01558	0.01603
	B0	0.01186	0.01182	0.01235
	B1	0.01490	0.01474	0.01481

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00435	0.00399	0.00386
	A1	0.00219	0.00191	0.00179
	B0	0.00216	0.00191	0.00190
	B1	0.00437	0.00402	0.00395

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)	-0.00462	-0.00509	-0.00514
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00462	-0.00509	-0.00514
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00495	-0.00512	-0.00513
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00522	-0.00523	-0.00522

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00515	0.00514	0.00514
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00515	0.00514	0.00514
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00514	0.00518	0.00513
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00522	0.00526	0.00522

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00241	-0.00241	-0.00241
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00241	-0.00241	-0.00241
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00491	-0.00507	-0.00510
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00521	-0.00521	-0.00521

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)	0.00244	0.00244	0.00244
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00244	0.00244	0.00244
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00511	0.00510	0.00510
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00521	0.00521	0.00522

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00240	-0.00240	-0.00240
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00240	-0.00240	-0.00240
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00545	-0.00560	-0.00562
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00573	-0.00573	-0.00574

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00243	0.00243	0.00242
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00243	0.00243	0.00242
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00563	0.00565	0.00562
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00574	0.00574	0.00574

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)	-0.00456	-0.00502	-0.00507
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00458	-0.00502	-0.00507
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00556	-0.00570	-0.00572
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00580	-0.00580	-0.00581

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00508	0.00512	0.00508
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00508	0.00512	0.00508
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00573	0.00577	0.00572
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00580	0.00585	0.00581

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__or2_1	0.00579	0.00561	0.21598
sky130_osu_sc_18T_ms__or2_2	0.00579	0.00561	0.41647
sky130_osu_sc_18T_ms__or2_4	0.00578	0.00561	0.79168
sky130_osu_sc_18T_ms__or2_8	0.00580	0.00563	1.48769
sky130_osu_sc_18T_ms__or2_l	0.00453	0.00431	0.14697

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__or2_1	A->Y (RR)	0.06617	0.18679	0.66062
	B->Y (RR)	0.05718	0.17245	0.62675
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.07353	0.18616	0.69281
	B->Y (RR)	0.06426	0.17406	0.66350
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.09562	0.20765	0.76340
	B->Y (RR)	0.08612	0.19670	0.73980
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.13678	0.25195	0.87131
	B->Y (RR)	0.12707	0.24234	0.85312
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.07281	0.20393	0.66521
	B->Y (RR)	0.06421	0.19088	0.63415

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)	0.10170	0.22857	0.72059
	B->Y (FF)	0.08353	0.21009	0.69066
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.12022	0.24308	0.76814
	B->Y (FF)	0.10211	0.22435	0.74508
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.16739	0.29191	0.86280
	B->Y (FF)	0.14936	0.27224	0.85079
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.26547	0.39533	1.01518
	B->Y (FF)	0.24755	0.37483	1.00927
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.11225	0.24568	0.71674
	B->Y (FF)	0.09439	0.22851	0.69461

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	0.00828	0.00759	0.00806
	B	0.00000	0.00000	0.00000
	B	0.00604	0.00568	0.00685
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01450	0.01417	0.01467
	B	0.00000	0.00000	0.00000
	B	0.01217	0.01236	0.01344
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02797	0.02819	0.02900
	B	0.00000	0.00000	0.00000
	B	0.02553	0.02584	0.02797
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.05636	0.05585	0.05764
	B	0.00000	0.00000	0.00000
	B	0.05378	0.05424	0.05752
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00612	0.00555	0.00592
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00439	0.00518

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	0.01807	0.01787	0.01833
	B	0.00000	0.00000	0.00000
	B	0.01481	0.01516	0.01740
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.02222	0.02255	0.02315
	B	0.00000	0.00000	0.00000
	B	0.01901	0.01975	0.02195
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.03362	0.03343	0.03485
	B	0.00000	0.00000	0.00000
	B	0.03040	0.03041	0.03325
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.06180	0.05532	0.05804
	B	0.00000	0.00000	0.00000
	B	0.05902	0.05225	0.05609
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01373	0.01350	0.01378
	B	0.00000	0.00000	0.00000
	B	0.01148	0.01162	0.01302

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)	-0.00467	-0.00511	-0.00516
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00467	-0.00511	-0.00516
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00467	-0.00512	-0.00516
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00467	-0.00512	-0.00517
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00335	-0.00364	-0.00367

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00516	0.00517
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00516	0.00517
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00516	0.00517
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00517	0.00516	0.00518
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00367	0.00367	0.00367

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00245	-0.00243
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00243
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00243
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00243	-0.00246	-0.00244
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00183	-0.00185	-0.00183

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)	0.00248	0.00249	0.00246
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00248	0.00249	0.00246
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00248	0.00249	0.00246
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00248	0.00249	0.00246
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00187	0.00187	0.00185

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tbufi_1	12.45420
sky130_osu_sc_18T_ms__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ms__tbufi_1	0.00578	0.00733	0.11024
sky130_osu_sc_18T_ms__tbufi_l	0.00450	0.00572	0.07487

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tbufi_1	A->Y (FR)	0.03852	0.18060	0.76887
	OE->Y (FR)	0.04580	0.09366	0.37293
	OE->Y (RR)	0.07404	0.20148	0.61592
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.04611	0.20097	0.77529
	OE->Y (FR)	0.04914	0.09938	0.37271
	OE->Y (RR)	0.08173	0.22222	0.62095

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)	0.03094	0.14255	0.60721
	OE->Y (FF)	0.04629	0.09421	0.37295
	OE->Y (RF)	0.02978	0.13853	0.57765
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.03544	0.15362	0.59796
	OE->Y (FF)	0.04970	0.09999	0.37272
	OE->Y (RF)	0.03470	0.14977	0.56778

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00783	0.00788	0.00845
	OE	0.00000	0.00000	0.00000
	OE	0.00795	0.00743	0.00911
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00601	0.00600	0.00628
	OE	0.00000	0.00000	0.00000
	OE	0.00568	0.00529	0.00646

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	-0.00147	-0.00151	-0.00134
	OE	0.00000	0.00000	0.00000
	OE	0.00520	0.00466	0.00645
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00098	-0.00103	-0.00095
	OE	0.00000	0.00000	0.00000
	OE	0.00364	0.00324	0.00444

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00401	-0.00401	-0.00401
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00349	-0.00349	-0.00349
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00307	-0.00307	-0.00307
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00273	-0.00275	-0.00273

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00401	0.00401	0.00401
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00354	0.00354	0.00353
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00307	0.00307	0.00307
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00276	0.00276	0.00275

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00310	0.00261	0.00443
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00274	0.00225	0.00406
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00213	0.00175	0.00297
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00187	0.00148	0.00271

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)	0.00891	0.00862	0.01134
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00905	0.00891	0.01159
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00704	0.00670	0.00839
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00716	0.00691	0.00859

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tnbufi_1	12.45420
sky130_osu_sc_18T_ms__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_ms__tnbufi_1	0.00578	0.00905	0.11029
sky130_osu_sc_18T_ms__tnbufi_l	0.00449	0.00679	0.07420

Leakage Information

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

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_ms__tnbufi_1	A->Y (FR)	0.03873	0.18072	0.76908
	OE->Y (RR)	0.02899	0.08047	0.37406
	OE->Y (FR)	0.05093	0.19574	0.77958
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.04643	0.20035	0.77121
	OE->Y (RR)	0.03050	0.08090	0.37435
	OE->Y (FR)	0.05716	0.21251	0.77000

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)	0.03053	0.14239	0.60721
	OE->Y (RF)	0.02877	0.08040	0.37405
	OE->Y (FF)	0.05197	0.15643	0.49050
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.03496	0.15295	0.59484
	OE->Y (RF)	0.03033	0.08089	0.37434
	OE->Y (FF)	0.05920	0.17231	0.49093

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00802	0.00807	0.00864
	OE	0.00000	0.00000	0.00000
	OE	0.01985	0.02008	0.02340
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00620	0.00618	0.00649
	OE	0.00000	0.00000	0.00000
	OE	0.01480	0.01482	0.01691

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00172	-0.00174	-0.00157
	OE	0.00000	0.00000	0.00000
	OE	0.01740	0.01769	0.02083
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00122	-0.00127	-0.00119
	OE	0.00000	0.00000	0.00000
	OE	0.01299	0.01313	0.01502

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00345	-0.00345	-0.00345
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00298	-0.00298	-0.00298
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00255	-0.00254	-0.00255
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00224	-0.00226	-0.00224

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00345	0.00345	0.00345
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00303	0.00302	0.00302
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00255	0.00254	0.00255
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00227	0.00226	0.00226

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)	-0.00638	-0.00735	-0.00529
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00626	-0.00714	-0.00520
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00453	-0.00520	-0.00386
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00443	-0.00507	-0.00378

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)	0.01495	0.01525	0.01847
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01473	0.01504	0.01824
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01122	0.01130	0.01329
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01106	0.01110	0.01314

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__xnor2_1	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xnor2_1	0.01143	0.01047	0.10950

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_1	0.00000	0.45187	0.80733

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xnor2_l	A->Y (RR)	B	0.09363	0.22472	0.64631
	A->Y (FR)	!B	0.05039	0.19185	0.77385
	B->Y (RR)	A	0.07459	0.20609	0.62592
	B->Y (FR)	!A	0.07077	0.21361	0.79107

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	0.09230	0.20836	0.57725
	A->Y (RF)	!B	0.04539	0.15506	0.60339
	B->Y (FF)	A	0.07988	0.19678	0.56628
	B->Y (RF)	!A	0.05745	0.16841	0.61814

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	0.00782	0.00719	0.00855
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01920	0.01891	0.02210
	B	A	0.00000	0.00000	0.00000
	B	A	0.00240	0.00203	0.00372
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02141	0.02112	0.02403

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	0.02376	0.02300	0.02530
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00503	0.00426	0.00587
	B	A	0.00000	0.00000	0.00000
	B	A	0.02177	0.02187	0.02474
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00640	0.00545	0.00699

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__xor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xor2_l	0.01141	0.01052	0.10918

Leakage Information

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

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_ms__xor2_l	A->Y (RR)	!B	0.08932	0.21595	0.63334
	A->Y (FR)	B	0.06328	0.20594	0.78653
	B->Y (RR)	!A	0.07711	0.20828	0.62825
	B->Y (FR)	A	0.06893	0.21203	0.79170

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	0.07904	0.19438	0.55346
	A->Y (RF)	B	0.04412	0.15957	0.62231
	B->Y (FF)	!A	0.07396	0.18968	0.54935
	B->Y (RF)	A	0.05353	0.16306	0.60090

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02272	0.02261	0.02571
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00374	0.00233	0.00356
	B	A	0.00000	0.00000	0.00000
	B	A	0.02335	0.02329	0.02636
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00206	0.00158	0.00324

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	0.00405	0.00298	0.00458
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02447	0.02459	0.02736
	B	A	0.00000	0.00000	0.00000
	B	A	0.00411	0.00307	0.00464
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02210	0.02248	0.02540

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_TT_1P8_25C.ccs
Cell Library: Process , Voltage 1.80,
Temp 25.00

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__tiehi	6.59340
sky130_osu_sc_18T_ms__tielo	6.59340

Pin Capacitance Information

Cell Name	Max Cap(pf)
	Y
sky130_osu_sc_18T_ms__tiehi	0.51314
sky130_osu_sc_18T_ms__tielo	0.78669

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__tielo	0.00000	0.00000	0.00000