sky130_osu_sc_18T_ms_tt_1P62_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_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.02062	0.02064	0.01575	2.53500	1.17954	2.45734
sky130_osu_sc_18T_ms__addf_l	0.02062	0.02063	0.01577	1.74492	1.17927	1.75650

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	0.32293	0.43506
sky130_osu_sc_18T_ms__addf_l	0.00000	0.27881	0.39093

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)	0.16719	1.92434	27.99720
	B->CO (RR)	0.14510	1.82704	26.69890
	CI->CO (RR)	0.15902	1.94841	28.45640
	CON->CO (FR)	0.03015	0.78072	11.33070
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.16906	1.79689	22.83750
	B->CO (RR)	0.14741	1.71275	21.92610
	CI->CO (RR)	0.16084	1.82169	23.31930
	CON->CO (FR)	0.03438	0.85498	11.42150

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)	0.22167	2.37638	34.38280
	B->CO (FF)	0.19913	2.27562	32.96500
	CI->CO (FF)	0.19420	2.33610	34.29470
	CON->CO (RF)	0.02746	0.70448	10.23180
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.21745	2.13425	26.89300
	B->CO (FF)	0.19602	2.05033	25.90280
	CI->CO (FF)	0.18994	2.09582	26.82820
	CON->CO (RF)	0.02964	0.73186	9.77539

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)	0.15846	1.03322	11.10870
	B->CON (FR)	0.13576	0.97734	10.72500
	CI->CON (FR)	0.13095	0.99686	11.08330
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.15077	1.02540	11.09840
	B->CON (FR)	0.12873	0.97003	10.71640
	CI->CON (FR)	0.12329	0.98908	11.07420

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)	0.10637	0.74970	8.20046
	B->CON (RF)	0.10034	0.73382	8.15961
	CI->CON (RF)	0.09817	0.77761	8.72107
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.10238	0.74562	8.19527
	B->CON (RF)	0.09675	0.73027	8.15549
	CI->CON (RF)	0.09416	0.77368	8.71596

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)	0.32020	2.13749	26.15360
	B->S (-R)	0.33221	2.13253	25.34180
	CI->S (-R)	0.29060	2.09187	26.05730
	CON->S (RR)	0.09288	0.71157	7.60910
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.30753	1.98943	21.99810
	B->S (-R)	0.31985	1.99405	21.49370
	CI->S (-R)	0.27769	1.94561	21.93010
	CON->S (RR)	0.09328	0.76667	7.66145

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)	0.27507	1.77645	20.86120
	B->S (-F)	0.27031	1.69864	20.00740
	CI->S (-F)	0.26584	1.79570	21.32120
	CON->S (FF)	0.11225	0.75276	7.38902
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.26218	1.63906	17.45020
	B->S (-F)	0.25713	1.57491	16.87470
	CI->S (-F)	0.25281	1.65966	17.92540
	CON->S (FF)	0.10906	0.77335	7.15498

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	0.00336	0.00373	0.01171
	B	0.00525	0.00534	0.01133
	CI	0.00533	0.00579	0.01392
sky130_osu_sc_18T_ms__addf_l	A	0.00253	0.00272	0.00767
	B	0.00444	0.00433	0.00812
	CI	0.00451	0.00477	0.00981

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01390	0.01430	0.02537
	B	0.01472	0.01516	0.02421
	CI	0.01165	0.01208	0.02342
sky130_osu_sc_18T_ms__addf_l	A	0.01309	0.01334	0.02058
	B	0.01390	0.01422	0.01987
	CI	0.01084	0.01111	0.01900

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01388	0.01408	0.01846
	B	0.01433	0.01456	0.01836
	CI	0.01289	0.01344	0.01735
sky130_osu_sc_18T_ms__addf_l	A	0.01308	0.01323	0.01768
	B	0.01354	0.01371	0.01755
	CI	0.01207	0.01258	0.01653

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00333	0.00355	0.00703
	B	0.00520	0.00514	0.00792
	CI	0.00531	0.00557	0.00916
sky130_osu_sc_18T_ms__addf_l	A	0.00251	0.00265	0.00595
	B	0.00439	0.00425	0.00687
	CI	0.00450	0.00468	0.00808

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01390	0.01429	0.02490
	B	0.01471	0.01515	0.02369
	CI	0.01165	0.01207	0.02312
sky130_osu_sc_18T_ms__addf_l	A	0.01309	0.01334	0.02060
	B	0.01390	0.01422	0.01996
	CI	0.01084	0.01112	0.01892

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.03128	0.03156	0.03704
	B	0.02790	0.02783	0.04078
	CI	0.02540	0.02539	0.03114
sky130_osu_sc_18T_ms__addf_l	A	0.03019	0.03026	0.03575
	B	0.02685	0.02669	0.04008
	CI	0.02433	0.02423	0.03023

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.01015	0.01107	2.51262	1.24098	2.53298
sky130_osu_sc_18T_ms__addh_l	0.01015	0.01107	1.49462	1.24613	1.51539

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	0.37567	0.43460
sky130_osu_sc_18T_ms__addh_l	0.00000	0.25434	0.33741

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)	0.11181	0.73261	7.50183
	B->CO (RR)	0.11639	0.73306	7.58997
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.11184	0.80286	7.35200
	B->CO (RR)	0.11637	0.80559	7.43519

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)	0.09488	0.71950	7.39994
	B->CO (FF)	0.10124	0.73349	7.41448
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.09446	0.75675	6.93188
	B->CO (FF)	0.10068	0.77102	6.94632

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	0.15086	0.61388	4.06069
	A->CON (FR)	!B	0.08750	0.92969	10.88350
	B->CON (RR)	A	0.15531	0.61333	4.14730
	B->CON (FR)	!A	0.10913	0.96598	11.01680
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.13546	0.58773	4.00367
	A->CON (FR)	!B	0.07792	0.92080	10.90050
	B->CON (RR)	A	0.13993	0.58997	4.07940
	B->CON (FR)	!A	0.09957	0.95706	11.03480

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	0.14668	0.77221	6.16431
	A->CON (RF)	!B	0.06308	0.72902	8.70866
	B->CON (FF)	A	0.14555	0.81105	6.55398
	B->CON (RF)	!A	0.07463	0.71796	8.35497
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.13327	0.73747	5.97912
	A->CON (RF)	!B	0.05816	0.72310	8.72255
	B->CON (FF)	A	0.13194	0.77662	6.36611
	B->CON (RF)	!A	0.06990	0.71405	8.36838

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	0.11780	1.84989	27.70290
	A->S (FR)	B	0.20151	1.87147	24.86820
	B->S (RR)	!A	0.12902	1.78993	26.40020
	B->S (FR)	A	0.20118	1.96019	26.18460
	CON->S (FR)	-	0.03366	0.80376	11.64740
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.11657	1.67445	21.08280
	A->S (FR)	B	0.19195	1.67506	18.17050
	B->S (RR)	!A	0.12815	1.63255	20.25860
	B->S (FR)	A	0.19136	1.74709	19.02040
	CON->S (FR)	-	0.03823	0.89507	11.56080

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	0.13978	2.14329	32.12730
	A->S (RF)	B	0.19388	1.47842	18.60060
	B->S (FF)	!A	0.16154	2.18489	32.33550
	B->S (RF)	A	0.19827	1.47610	18.68780
	CON->S (RF)	-	0.02578	0.68630	9.95389
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.13423	1.86891	23.41660
	A->S (RF)	B	0.18136	1.31838	13.49270
	B->S (FF)	!A	0.15580	1.90829	23.57780
	B->S (RF)	A	0.18582	1.32077	13.56310
	CON->S (RF)	-	0.02941	0.74113	9.60124

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	0.00642	0.00612	0.00792
	B	0.00000	0.00000	0.00000
	B	0.00578	0.00546	0.00771
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00527	0.00495	0.00856
	B	0.00000	0.00000	0.00000
	B	0.00463	0.00424	0.00778

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	0.01014	0.00988	0.01518
	B	0.00000	0.00000	0.00000
	B	0.01049	0.01074	0.01637
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00898	0.00869	0.01389
	B	0.00000	0.00000	0.00000
	B	0.00934	0.00947	0.01480

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	0.00642	0.00615	0.00876
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00879	0.00891	0.01021
	B	A	0.00000	0.00000	0.00000
	B	A	0.00578	0.00549	0.00853
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00985	0.00985	0.01028
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00526	0.00494	0.00820
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00803	0.00810	0.00930
	B	A	0.00000	0.00000	0.00000
	B	A	0.00462	0.00422	0.00764
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00909	0.00904	0.00934

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	0.01014	0.00988	0.01510
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00138	0.00142	0.00215
	B	A	0.00000	0.00000	0.00000
	B	A	0.01049	0.01071	0.01602
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00243	0.00232	0.00314
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00898	0.00868	0.01384
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00039	0.00037	0.00072
	B	A	0.00000	0.00000	0.00000
	B	A	0.00934	0.00948	0.01478
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00145	0.00131	0.00175

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	0.01015	0.00989	0.01536
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00140	0.00151	0.00268
	B	A	0.00000	0.00000	0.00000
	B	A	0.01050	0.01078	0.01660
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00246	0.00241	0.00339
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00899	0.00870	0.01407
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00040	0.00076
	B	A	0.00000	0.00000	0.00000
	B	A	0.00934	0.00950	0.01460
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00147	0.00130	0.00170

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	0.00643	0.00613	0.00820
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00879	0.00897	0.01004
	B	A	0.00000	0.00000	0.00000
	B	A	0.00578	0.00546	0.00761
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00987	0.00991	0.01046
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00527	0.00496	0.00854
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00803	0.00813	0.00917
	B	A	0.00000	0.00000	0.00000
	B	A	0.00463	0.00424	0.00770
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00910	0.00905	0.00940

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00545	0.00555	2.51210
sky130_osu_sc_18T_ms__and2_2	0.00545	0.00555	4.86116
sky130_osu_sc_18T_ms__and2_4	0.00545	0.00556	9.26200
sky130_osu_sc_18T_ms__and2_6	0.00549	0.00555	13.65130
sky130_osu_sc_18T_ms__and2_8	0.00547	0.00557	17.44276
sky130_osu_sc_18T_ms__and2_l	0.00423	0.00433	1.73704

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	0.18105	0.28957
sky130_osu_sc_18T_ms__and2_2	0.00000	0.28958	0.29006
sky130_osu_sc_18T_ms__and2_4	0.00000	0.50663	0.57866
sky130_osu_sc_18T_ms__and2_6	0.00000	0.72369	0.86775
sky130_osu_sc_18T_ms__and2_8	0.00000	0.94075	1.15683
sky130_osu_sc_18T_ms__and2_l	0.00000	0.12605	0.20162

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)	0.08509	0.65514	7.21668
	B->Y (RR)	0.09081	0.66445	7.21305
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.09906	0.61545	7.32188
	B->Y (RR)	0.10473	0.61761	7.32271
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.13684	0.64498	7.66147
	B->Y (RR)	0.14255	0.63882	7.67120
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.17297	0.69011	7.97823
	B->Y (RR)	0.17857	0.67837	7.98675
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.20878	0.74074	8.18138
	B->Y (RR)	0.21445	0.72210	8.18310
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.09517	0.73405	7.25543
	B->Y (RR)	0.10128	0.74326	7.27218

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)	0.07324	0.63479	6.82329
	B->Y (FF)	0.07741	0.65185	6.86190
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.08372	0.60415	6.88902
	B->Y (FF)	0.08860	0.61740	6.93541
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.11538	0.63145	7.17384
	B->Y (FF)	0.12036	0.64153	7.22508
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.14985	0.67271	7.43683
	B->Y (FF)	0.15473	0.68327	7.48716
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.18148	0.71153	7.47105
	B->Y (FF)	0.18655	0.71963	7.51736
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.07992	0.69724	6.73678
	B->Y (FF)	0.08525	0.71551	6.79411

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	0.00486	0.00447	0.01931
	B	0.00000	0.00000	0.00000
	B	0.00495	0.00427	0.01289
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00974	0.00980	0.02327
	B	0.00000	0.00000	0.00000
	B	0.00984	0.00955	0.01742
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02038	0.02107	0.03365
	B	0.00000	0.00000	0.00000
	B	0.02041	0.02200	0.02887
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.03121	0.03215	0.04335
	B	0.00000	0.00000	0.00000
	B	0.03138	0.03214	0.03956
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.04240	0.04298	0.05322
	B	0.00000	0.00000	0.00000
	B	0.04255	0.04305	0.04967
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00361	0.00330	0.01316
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00315	0.00922

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	0.01215	0.01278	0.02872
	B	0.00000	0.00000	0.00000
	B	0.01372	0.01418	0.02906
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01533	0.01661	0.03232
	B	0.00000	0.00000	0.00000
	B	0.01693	0.01788	0.03264
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02327	0.02578	0.04130
	B	0.00000	0.00000	0.00000
	B	0.02486	0.02689	0.04132
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.03120	0.03506	0.05065
	B	0.00000	0.00000	0.00000
	B	0.03296	0.03574	0.05021
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.03940	0.04409	0.06000
	B	0.00000	0.00000	0.00000
	B	0.04094	0.04425	0.05889
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00945	0.00975	0.01996
	B	0.00000	0.00000	0.00000
	B	0.01061	0.01081	0.02044

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)	-0.00459	-0.00462	-0.00463
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00459	-0.00462	-0.00462
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00459	-0.00462	-0.00462
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00461	-0.00464	-0.00464
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00458	-0.00461	-0.00462
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00340	-0.00342	-0.00343

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)	0.00463	0.00466	0.00464
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00463	0.00466	0.00464
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00463	0.00466	0.00465
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00465	0.00469	0.00467
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00463	0.00467	0.00465
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00343	0.00345	0.00344

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)	-0.00434	-0.00436	-0.00435
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00436	-0.00435
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00435	-0.00435
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00436	-0.00435
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00434	-0.00436	-0.00435
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00322	-0.00323	-0.00323

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)	0.00438	0.00439	0.00437
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00438	0.00439	0.00437
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00438	0.00439	0.00437
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00439	0.00439	0.00438
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00439	0.00440	0.00438
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00324	0.00325	0.00324

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00517	0.00538	0.00520	1.16127

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	0.06721	0.14455

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)	0.08673	0.95819	10.96390
	A1->Y (FR)	0.07439	0.91430	10.60000
	B0->Y (FR)	0.06279	0.92600	10.93650

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)	0.05839	0.66812	7.71527
	A1->Y (RF)	0.05297	0.68040	8.06147
	B0->Y (RF)	0.03464	0.64764	7.91474

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	0.01086	0.01077	0.01135
	A1	0.00000	0.00000	0.00000
	A1	0.00916	0.00905	0.00971
	B0	0.00846	0.00838	0.01047

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	0.00239	0.00201	0.00239
	A1	0.00000	0.00000	0.00000
	A1	0.00242	0.00212	0.00269
	B0	-0.00116	-0.00111	-0.00062

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)	-0.00357	-0.00404	-0.00406
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00411	-0.00414	-0.00412
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00411	-0.00413	-0.00412

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)	0.00403	0.00408	0.00406
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00411	0.00415	0.00413
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00414	0.00414	0.00413

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)	-0.00355	-0.00401	-0.00401
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00405	-0.00407	-0.00407
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00438	-0.00437	-0.00442

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)	0.00398	0.00403	0.00401
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00406	0.00412	0.00408
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00442	0.00446	0.00444

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)	-0.00199	-0.00201	-0.00200

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)	0.00219	0.00221	0.00205

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_18T_ms__aoi22_l	0.00518	0.00538	0.00554	0.00531	1.11759

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__aoi22_l	0.00000	0.07400	0.28908

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)	0.11003	0.98655	10.90430
	A1->Y (FR)	0.09802	0.95753	10.71360
	B0->Y (FR)	0.06584	0.91465	10.69520
	B1->Y (FR)	0.07810	0.94746	10.93620

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)	0.07652	0.67962	7.57096
	A1->Y (RF)	0.07110	0.69197	7.92309
	B0->Y (RF)	0.03923	0.65566	7.89373
	B1->Y (RF)	0.04483	0.64311	7.54354

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	0.01324	0.01311	0.01362
	A1	0.01156	0.01141	0.01192
	B0	0.00905	0.00904	0.01156
	B1	0.01067	0.01066	0.01319

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00491	0.00451	0.00486
	A1	0.00495	0.00460	0.00516
	B0	-0.00077	-0.00075	-0.00012
	B1	-0.00064	-0.00082	-0.00034

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)	-0.00361	-0.00404	-0.00406
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00411	-0.00414	-0.00411
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00411	-0.00412	-0.00412
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00411	-0.00412	-0.00412

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)	0.00403	0.00407	0.00406
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00411	0.00415	0.00413
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00414	0.00414	0.00413
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00414	0.00414	0.00413

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)	-0.00358	-0.00400	-0.00401
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00406	-0.00409	-0.00407
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00438	-0.00442	-0.00442
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00438	-0.00442	-0.00442

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)	0.00398	0.00402	0.00401
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00407	0.00412	0.00408
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00442	0.00445	0.00443
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00441	0.00445	0.00443

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)	-0.00200	-0.00202	-0.00201
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00199	-0.00201	-0.00200
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00449	-0.00452	-0.00453
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00449	-0.00452	-0.00453

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)	0.00229	0.00230	0.00208
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00200	0.00202	0.00200
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00453	0.00457	0.00454
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00453	0.00457	0.00454

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)	-0.00201	-0.00203	-0.00202
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00200	-0.00202	-0.00201
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00417	-0.00420	-0.00418
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00417	-0.00420	-0.00418

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)	0.00230	0.00231	0.00209
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00200	0.00202	0.00201
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00420	0.00420	0.00419
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00420	0.00420	0.00419

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00556	2.51064
sky130_osu_sc_18T_ms__buf_2	0.00556	4.93137
sky130_osu_sc_18T_ms__buf_4	0.00555	9.48224
sky130_osu_sc_18T_ms__buf_6	0.00097	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00557	17.85828
sky130_osu_sc_18T_ms__buf_l	0.00438	1.74361

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	0.14503	0.14503
sky130_osu_sc_18T_ms__buf_2	0.00000	0.21755	0.28957
sky130_osu_sc_18T_ms__buf_4	0.00000	0.36257	0.57866
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	0.65263	1.15683
sky130_osu_sc_18T_ms__buf_l	0.00000	0.10091	0.10091

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)**	0.06482	0.61939	7.10671
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.07290	0.57012	7.25503
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.09858	0.58194	7.58830
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.14716	0.64612	7.98530
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.07273	0.69608	7.13359

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)**	0.06983	0.62498	6.79855
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.08102	0.60075	6.97007
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.11281	0.62913	7.29355
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.17881	0.71025	7.59644
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.07737	0.68996	6.73583

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	0.00452	0.00437	0.01533
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00941	0.00930	0.01993
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01998	0.02043	0.03142
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.04113	0.04290	0.05285
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00345	0.00306	0.01122

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	0.01173	0.01229	0.02797
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01490	0.01597	0.03113
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02285	0.02504	0.03992
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.03928	0.04304	0.05796
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00920	0.00945	0.01961

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
	-0.00062	-0.00062	-0.00062

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
	0.00062	0.00062	0.00062

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00532	0.00529	0.01539	2.45178	2.43303
sky130_osu_sc_18T_ms__dffr_l	0.00532	0.00529	0.01538	1.73956	1.74180

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	0.45022	0.68778
sky130_osu_sc_18T_ms__dffr_l	0.00000	0.40610	0.64366

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)	0.32611	1.53562	17.40480
	QN->Q (FR)	0.03503	0.87127	12.59460
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.32159	1.64635	16.99050
	QN->Q (FR)	0.03766	0.91920	12.29970

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)	0.32614	1.58308	18.22630
	QN->Q (RF)	0.03171	0.80733	11.64990
	RN->Q (FF)	0.24003	1.57357	18.98130
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.33103	1.71959	17.90710
	QN->Q (RF)	0.03262	0.81662	10.90280
	RN->Q (FF)	0.24533	1.70975	18.64610

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)	0.28508	0.87266	7.29813
	RN->QN (FR)	0.19893	0.86278	8.04485
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.28550	0.93327	7.35691
	RN->QN (FR)	0.19966	0.92336	8.09651

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)**	0.27800	0.81864	6.42370
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.26812	0.83661	6.16439

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)	-0.07082	-0.09519	-0.30394
	setup	CK (R)	0.25945	0.29439	1.07891
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.07244	-0.09627	-0.30210
	setup	CK (R)	0.26014	0.29525	1.08894

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)	-0.12772	-0.40070	-3.05616
	setup	CK (R)	0.16111	0.41347	3.11526
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.12735	-0.40079	-3.05449
	setup	CK (R)	0.15733	0.41347	3.11521

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)	-0.07082	-0.09519	-0.30394
	setup	CK (R)	0.25945	0.29439	1.07891
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.07244	-0.09627	-0.30210
	setup	CK (R)	0.26014	0.29525	1.08894

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)	-0.12772	-0.40070	-3.05616
	setup	CK (R)	0.16111	0.41347	3.11526
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.12735	-0.40079	-3.05449
	setup	CK (R)	0.15733	0.41347	3.11521

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)	0.21133	0.24548	1.13154
	removal	CK (R)	-0.03726	-0.04552	-0.12437
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.21157	0.24696	1.13986
	removal	CK (R)	-0.03726	-0.04552	-0.12437

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)	0.21133	0.24548	1.13154
	removal	CK (R)	-0.03726	-0.04552	-0.12437
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.21157	0.24696	1.13986
	removal	CK (R)	-0.03726	-0.04552	-0.12437

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 ()	0.14185	0.53345	13.33370
	min_pulse_width	RN ()	0.14185	0.53345	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.13785	0.53345	13.33370
	min_pulse_width	RN ()	0.13785	0.53345	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	min_pulse_width	CK ()	0.14984	0.53345	13.33370
	min_pulse_width	CK ()	0.17382	0.53345	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.14185	0.53345	13.33370
	min_pulse_width	CK ()	0.16982	0.53345	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffr_1	min_pulse_width	CK ()	0.32566	0.53345	13.33370
	min_pulse_width	CK ()	0.12986	0.53345	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.32566	0.53345	13.33370
	min_pulse_width	CK ()	0.12986	0.53345	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01193	0.00844	0.00000
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.00812	-0.00325

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	0.01347	0.01120	0.00000
	RN	-0.00158	-0.10072	-1.60860
	RN	0.03115	0.02911	0.00901
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01215	0.01060	0.00325
	RN	-0.00158	-0.08198	-1.14132
	RN	0.02982	0.02849	0.02256

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	0.01346	0.01120	0.00000
	RN	-0.00158	-0.10026	-1.59603
	RN	0.03113	0.02910	0.00925
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01214	0.01059	0.00324
	RN	-0.00158	-0.08204	-1.14272
	RN	0.02981	0.02848	0.02232

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	0.01189	0.00838	0.00000
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01059	0.00811	-0.00324

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	-0.00341	-0.00398	-0.00404
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01462	0.01379	0.01960
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00655	0.00582	0.01189
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00341	-0.00398	-0.00404
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01462	0.01379	0.01960
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00655	0.00581	0.01189

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	0.00401	0.00405	0.00405
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02434	0.02393	0.03079
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01144	0.01111	0.01795
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00401	0.00405	0.00405
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02434	0.02393	0.03079
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01144	0.01111	0.01795

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)	0.00462	0.00405	0.01883
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01288	0.01201	0.02650
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)	0.00462	0.00404	0.01883
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01288	0.01201	0.02650

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)	0.01094	0.01109	0.02857
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02338	0.02305	0.04045
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)	0.01094	0.01109	0.02857
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02338	0.02305	0.04045

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)	-0.00083	-0.00151	0.01285
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00698	0.00541	0.02003
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00133	-0.00211	0.01215
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00083	-0.00151	0.01285
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00698	0.00541	0.02003
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00133	-0.00211	0.01215

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)	0.01697	0.01736	0.03466
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03704	0.03611	0.05408
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02833	0.02790	0.04465
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03645	0.03681	0.06815
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01929	0.01940	0.03641
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01697	0.01737	0.03466
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03704	0.03610	0.05408
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02833	0.02792	0.04465
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03645	0.03682	0.06815
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01929	0.01953	0.03641

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00528	0.00529	0.01137	0.01565	2.55212	2.55005
sky130_osu_sc_18T_ms__dffsr_l	0.00528	0.00529	0.01136	0.01565	1.74158	1.74710

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffsr_1	0.00000	0.49390	0.68824
sky130_osu_sc_18T_ms__dffsr_l	0.00000	0.44978	0.64412

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)	0.33339	1.52901	17.33230
	QN->Q (FR)	0.03331	0.84847	12.39430
	RN->Q (RR)	0.26635	1.47614	17.32630
	SN->Q (FR)	0.24445	1.55340	18.49690
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.33797	1.67245	17.06030
	QN->Q (FR)	0.03759	0.91693	12.27280
	RN->Q (RR)	0.27146	1.62018	17.06130
	SN->Q (FR)	0.24926	1.69454	18.20460

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)	0.36938	1.60986	18.20790
	QN->Q (RF)	0.02897	0.76342	11.09290
	RN->Q (FF)	0.24598	1.56614	18.95140
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.37903	1.77236	17.96960
	QN->Q (RF)	0.03255	0.81453	10.89740
	RN->Q (FF)	0.25594	1.72904	18.70580

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)	0.32926	0.91965	7.42693
	RN->QN (FR)	0.20680	0.87675	8.16932
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.33264	0.98604	7.42908
	RN->QN (FR)	0.21016	0.94321	8.16478

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)	0.28832	0.82878	6.43849
	RN->QN (RF)	0.22163	0.77611	6.43583
	SN->QN (FF)	0.19980	0.85356	7.59799
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.28574	0.86445	6.24479
	RN->QN (RF)	0.21953	0.81285	6.23900
	SN->QN (FF)	0.19747	0.88650	7.38475

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)	-0.07847	-0.10526	-0.36212
	setup	CK (R)	0.25535	0.28841	1.10667
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07683	-0.10462	-0.36326
	setup	CK (R)	0.25604	0.28744	1.10519

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)	-0.14591	-0.42166	-3.17213
	setup	CK (R)	0.18695	0.43173	3.21983
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.14605	-0.41943	-3.17049
	setup	CK (R)	0.18675	0.43173	3.21983

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)	-0.07847	-0.10526	-0.36212
	setup	CK (R)	0.25535	0.28841	1.10667
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07683	-0.10462	-0.36326
	setup	CK (R)	0.25604	0.28744	1.10519

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)	-0.14591	-0.42166	-3.17213
	setup	CK (R)	0.18695	0.43173	3.21983
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.14605	-0.41943	-3.17049
	setup	CK (R)	0.18675	0.43173	3.21983

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)	0.18795	0.21653	1.05907
	removal	CK (R)	-0.02221	-0.02642	-0.08511
	hold	SN (R)	-0.19174	-0.40613	-1.90906
	setup	SN (R)	0.21764	0.46483	4.57901
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.18730	0.21547	1.05759
	removal	CK (R)	-0.02221	-0.02642	-0.08511
	hold	SN (R)	-0.18552	-0.39899	-1.86602
	setup	SN (R)	0.21716	0.45783	4.49719

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)	0.18795	0.21653	1.05907
	removal	CK (R)	-0.02221	-0.02642	-0.08511
	hold	SN (R)	-0.19244	-0.40613	-1.90906
	hold	SN (R)	-0.19174	-0.40726	-1.91779
	setup	SN (R)	0.21764	0.46364	4.35702
	setup	SN (R)	0.21263	0.46483	4.57901
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.18730	0.21547	1.05759
	removal	CK (R)	-0.02221	-0.02642	-0.08511
	hold	SN (R)	-0.18883	-0.39914	-1.86602
	hold	SN (R)	-0.18552	-0.39899	-1.87204
	setup	SN (R)	0.21716	0.45672	4.21115
	setup	SN (R)	0.20440	0.45783	4.49719

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 ()	0.16183	0.53345	13.33370
	min_pulse_width	RN ()	0.16183	0.53345	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.16183	0.53345	13.33370
	min_pulse_width	RN ()	0.15783	0.53345	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	recovery	CK (R)	0.04715	0.09340	3.70247
	removal	CK (R)	-0.01776	-0.06954	-0.38154
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.04647	0.09309	3.60671
	removal	CK (R)	-0.01776	-0.06954	-0.38554

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)	0.04715	0.09340	3.70247
	removal	CK (R)	-0.01776	-0.06954	-0.38154
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.04647	0.09309	3.60671
	removal	CK (R)	-0.01776	-0.06954	-0.38554

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 ()	0.19380	0.53345	13.33370
	min_pulse_width	SN ()	0.18980	0.53345	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.19380	0.53345	13.33370
	min_pulse_width	SN ()	0.18181	0.53345	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	min_pulse_width	CK ()	0.15384	0.53345	13.33370
	min_pulse_width	CK ()	0.18980	0.53345	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.14585	0.53345	13.33370
	min_pulse_width	CK ()	0.18580	0.53345	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	min_pulse_width	CK ()	0.32166	0.53345	13.33370
	min_pulse_width	CK ()	0.16183	0.53345	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.32166	0.53345	13.33370
	min_pulse_width	CK ()	0.16183	0.53345	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01490	0.01245	0.00000
	RN	0.02729	0.02508	0.00041
	SN	-0.00158	-0.10318	-1.67445
	SN	0.03036	0.02798	0.00073
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01372	0.01120	-0.00242
	RN	0.02608	0.02385	0.00565
	SN	-0.00158	-0.08203	-1.14265
	SN	0.02915	0.02675	0.00632

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	0.01570	0.01383	0.00000
	RN	-0.00158	-0.10318	-1.67444
	RN	0.03202	0.03020	0.01493
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01450	0.01306	0.00600
	RN	-0.00158	-0.08203	-1.14265
	RN	0.03080	0.02938	0.02364

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	0.01568	0.01382	0.00000
	RN	-0.00158	-0.10312	-1.67297
	RN	0.03199	0.03017	0.01411
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01449	0.01306	0.00603
	RN	-0.00158	-0.08219	-1.14620
	RN	0.03078	0.02938	0.02363

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	0.01484	0.01238	0.00000
	RN	0.02723	0.02503	-0.00049
	SN	-0.00158	-0.10312	-1.67301
	SN	0.03030	0.02795	0.00136
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01366	0.01116	-0.00295
	RN	0.02602	0.02380	0.00510
	SN	-0.00158	-0.08219	-1.14621
	SN	0.02910	0.02672	0.00663

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	-0.00394	-0.00402	-0.00403
	(!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)	0.01861	0.01782	0.02360
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00733	0.00660	0.01252
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00730	0.00659	0.01253
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00737	0.00665	0.01257
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00394	-0.00402	-0.00403
	(!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)	0.01862	0.01782	0.02361
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00733	0.00660	0.01252
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00730	0.00659	0.01253
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00737	0.00665	0.01257

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	0.00403	0.00405	0.00403
	(!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)	0.02772	0.02727	0.03369
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01198	0.01170	0.01849
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01212	0.01182	0.01850
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01193	0.01168	0.01844
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00403	0.00405	0.00403
	(!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)	0.02772	0.02726	0.03368
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01197	0.01169	0.01848
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01211	0.01181	0.01849
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01192	0.01167	0.01843

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)	0.00386	0.00336	0.01784
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01536	0.01447	0.02903
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)	0.00386	0.00336	0.01785
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01536	0.01447	0.02904

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)	0.01161	0.01192	0.02961
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02454	0.02418	0.04167
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)	0.01160	0.01191	0.02960
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02452	0.02417	0.04166

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)	-0.00911	-0.00911	-0.00918
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00857	-0.00940	-0.00941
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00862	-0.00909	-0.00905
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00631	0.00571	0.01247
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)	-0.00911	-0.00911	-0.00918
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00856	-0.00938	-0.00940
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00862	-0.00909	-0.00905
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00631	0.00572	0.01248

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)	0.00918	0.00926	0.00922
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00937	0.00946	0.00944
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00904	0.00910	0.00908
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01904	0.01857	0.02479
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)	0.00918	0.00926	0.00922
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00935	0.00944	0.00942
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00903	0.00909	0.00908
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01903	0.01857	0.02478

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)	-0.00083	-0.00151	0.01284
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00784	0.00639	0.02096
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00767	0.00624	0.02092
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00112	-0.00187	0.01235
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00528	0.00376	0.03231
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00083	-0.00151	0.01284
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00784	0.00638	0.02097
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00766	0.00623	0.02091
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00112	-0.00187	0.01235
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00528	0.00376	0.03232

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)	0.04128	0.04040	0.05831
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01702	0.01739	0.03471
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02883	0.02849	0.04519
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02888	0.02852	0.04520
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03981	0.03995	0.07111
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01913	0.01936	0.03624
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02258	0.02322	0.05618
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.04128	0.04040	0.05829
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01702	0.01739	0.03471
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02883	0.02849	0.04519
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02888	0.02852	0.04520
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03980	0.03995	0.07110
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01912	0.01936	0.03624
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02257	0.02321	0.05617

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00530	0.00908	0.01543	2.45274	2.44491
sky130_osu_sc_18T_ms__dffs_l	0.00530	0.00908	0.01543	1.75009	1.75609

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	0.45696	0.69384
sky130_osu_sc_18T_ms__dffs_l	0.00000	0.41283	0.64971

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)	0.24572	1.44025	17.23720
	QN->Q (FR)	0.03484	0.86438	12.49460
	SN->Q (FR)	0.18631	1.51512	18.26410
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.24674	1.56351	16.94750
	QN->Q (FR)	0.03749	0.91750	12.27060
	SN->Q (FR)	0.18710	1.63114	17.94920

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)	0.36259	1.62141	18.19730
	QN->Q (RF)	0.03145	0.80462	11.59960
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.36547	1.75959	17.99250
	QN->Q (RF)	0.03242	0.81368	10.90240

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)	0.31964	0.91426	7.32997
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.31832	0.97278	7.41928

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)	0.20200	0.72781	6.33372
	SN->QN (FF)	0.14265	0.80419	7.35228
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.19782	0.75511	6.10171
	SN->QN (FF)	0.13783	0.82347	7.09687

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)	-0.05561	-0.08199	-0.26156
	setup	CK (R)	0.17792	0.21934	1.05845
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.05480	-0.08259	-0.26247
	setup	CK (R)	0.17752	0.21961	1.06432

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)	-0.13194	-0.40026	-3.06717
	setup	CK (R)	0.17588	0.41652	3.13483
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.12936	-0.40026	-3.06652
	setup	CK (R)	0.17574	0.41650	3.13484

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)	-0.05561	-0.08199	-0.26156
	setup	CK (R)	0.17792	0.21934	1.05845
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.05480	-0.08259	-0.26247
	setup	CK (R)	0.17752	0.21961	1.06432

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)	-0.13194	-0.40026	-3.06717
	setup	CK (R)	0.17588	0.41652	3.13483
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.12936	-0.40026	-3.06652
	setup	CK (R)	0.17574	0.41650	3.13484

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)	0.05245	0.09097	2.79315
	removal	CK (R)	-0.01859	-0.06302	-0.37925
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.05007	0.09055	2.67540
	removal	CK (R)	-0.01859	-0.06302	-0.37925

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)	0.05245	0.09097	2.79315
	removal	CK (R)	-0.01859	-0.06302	-0.37925
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.05007	0.09055	2.67540
	removal	CK (R)	-0.01859	-0.06302	-0.37925

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 ()	0.12587	0.53345	13.33370
	min_pulse_width	SN ()	0.12587	0.53345	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.12187	0.53345	13.33370
	min_pulse_width	SN ()	0.12187	0.53345	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	min_pulse_width	CK ()	0.10589	0.53345	13.33370
	min_pulse_width	CK ()	0.18181	0.53345	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.10189	0.53345	13.33370
	min_pulse_width	CK ()	0.17781	0.53345	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dffs_1	min_pulse_width	CK ()	0.24574	0.53345	13.33370
	min_pulse_width	CK ()	0.15384	0.53345	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.24574	0.53345	13.33370
	min_pulse_width	CK ()	0.15384	0.53345	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01197	0.00846	0.00000
	SN	-0.00158	-0.10075	-1.60925
	SN	0.02588	0.02236	-0.01463
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01067	0.00813	-0.00397
	SN	-0.00158	-0.08228	-1.14823
	SN	0.02456	0.02205	0.00552

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	0.01336	0.01124	0.00000
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01205	0.01061	0.00397

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	0.01335	0.01128	0.00000
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01204	0.01060	0.00391

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	0.01192	0.00842	0.00000
	SN	-0.00158	-0.10055	-1.60397
	SN	0.02583	0.02231	-0.01421
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01062	0.00810	-0.00391
	SN	-0.00158	-0.08244	-1.15211
	SN	0.02451	0.02201	0.00535

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	-0.00398	-0.00408	-0.00407
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01403	0.01315	0.01910
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00638	0.00565	0.01166
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00398	-0.00408	-0.00407
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01403	0.01315	0.01910
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00637	0.00565	0.01166

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	0.00408	0.00409	0.00407
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02350	0.02299	0.02981
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01150	0.01123	0.01813
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00408	0.00409	0.00407
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02350	0.02300	0.02981
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01150	0.01123	0.01813

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)	-0.00680	-0.00685	-0.00684
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00490	0.00446	0.01224
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)	-0.00680	-0.00685	-0.00684
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00489	0.00446	0.01224

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)	0.00684	0.00692	0.00686
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01334	0.01299	0.02286
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)	0.00684	0.00692	0.00686
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01334	0.01299	0.02286

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)	-0.00085	-0.00153	0.01290
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00123	-0.00200	0.01227
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00429	0.00280	0.03184
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00085	-0.00153	0.01290
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00123	-0.00200	0.01227
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00429	0.00280	0.03184

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)	0.03657	0.03565	0.05394
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01698	0.01738	0.03469
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03552	0.03569	0.06708
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01918	0.01935	0.03631
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02202	0.02271	0.05599
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03657	0.03564	0.05394
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01698	0.01739	0.03469
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03552	0.03569	0.06708
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01918	0.01934	0.03631
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02202	0.02271	0.05599

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00546	0.01525	2.55795	2.56150
sky130_osu_sc_18T_ms__dff_l	0.00546	0.01523	1.71735	1.73208

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	0.45390	0.58008
sky130_osu_sc_18T_ms__dff_l	0.00000	0.40978	0.53596

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)	0.21891	1.39452	17.14090
	QN->Q (FR)	0.03307	0.84405	12.35250
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.22734	1.54134	16.71560
	QN->Q (FR)	0.03819	0.92528	12.33630

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)	0.30502	1.53779	18.11530
	QN->Q (RF)	0.02882	0.76114	11.07120
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.31663	1.70363	17.77700
	QN->Q (RF)	0.03248	0.80882	10.78490

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)	0.26653	0.84840	7.35273
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.27141	0.92178	7.37580

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)	0.17829	0.69663	6.26618
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.17918	0.73562	6.00606

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)	-0.05267	-0.08187	-0.27754
	setup	CK (R)	0.14774	0.19579	1.08076
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.05255	-0.08098	-0.27530
	setup	CK (R)	0.14796	0.19256	1.08333

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)	-0.11968	-0.39865	-3.07354
	setup	CK (R)	0.14488	0.41386	3.14196
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.11910	-0.39865	-3.07354
	setup	CK (R)	0.14540	0.41386	3.14196

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 ()	0.09789	0.53345	13.33370
	min_pulse_width	CK ()	0.16583	0.53345	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.09789	0.53345	13.33370
	min_pulse_width	CK ()	0.16183	0.53345	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_ms__dff_1	**min_pulse_width**	**CK ()**	0.21777	0.53345	13.33370
	min_pulse_width	**CK ()**	0.11388	0.53345	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.21378	0.53345	13.33370
	min_pulse_width	**CK ()**	0.11388	0.53345	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01259	0.00999	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01140	0.00882	-0.00301

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	0.01363	0.01179	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01245	0.01090	0.00301

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	0.01362	0.01179	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01245	0.01088	0.00285

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	0.01255	0.00999	0.00000
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01135	0.00880	-0.00285

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	-0.00341	-0.00399	-0.00404
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01316	0.01239	0.01852
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00341	-0.00399	-0.00404
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01316	0.01239	0.01852

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	0.00400	0.00404	0.00404
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02418	0.02368	0.03055
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00400	0.00404	0.00404
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02418	0.02379	0.03055

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)	-0.00085	-0.00153	0.01292
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00122	-0.00197	0.01230
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00085	-0.00153	0.01292
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00122	-0.00197	0.01230

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)	0.01692	0.01733	0.03463
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03576	0.03484	0.05336
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03604	0.03621	0.06786
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01911	0.01922	0.03624
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01692	0.01732	0.03463
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03577	0.03484	0.05336
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03604	0.03621	0.06787
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01910	0.01934	0.03624

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00533	2.44524
sky130_osu_sc_18T_ms__inv_10	0.05028	21.37720
sky130_osu_sc_18T_ms__inv_2	0.01025	4.74527
sky130_osu_sc_18T_ms__inv_3	0.01528	6.77603
sky130_osu_sc_18T_ms__inv_4	0.02022	9.12345
sky130_osu_sc_18T_ms__inv_6	0.03032	13.56094
sky130_osu_sc_18T_ms__inv_8	0.04031	17.58136
sky130_osu_sc_18T_ms__inv_l	0.00413	1.65669

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	0.07252	0.14455
sky130_osu_sc_18T_ms__inv_10	0.00000	0.72515	1.44543
sky130_osu_sc_18T_ms__inv_2	0.00000	0.14503	0.28909
sky130_osu_sc_18T_ms__inv_3	0.00000	0.21755	0.43363
sky130_osu_sc_18T_ms__inv_4	0.00000	0.29006	0.57817
sky130_osu_sc_18T_ms__inv_6	0.00000	0.43509	0.86726
sky130_osu_sc_18T_ms__inv_8	0.00000	0.58012	1.15635
sky130_osu_sc_18T_ms__inv_l	0.00000	0.05045	0.10071

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)**	0.03126	0.77641	11.16620
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.04895	0.54639	11.07800
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.02616	0.67477	11.06520
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.02924	0.63416	11.06360
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.03048	0.60824	11.05670
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.03502	0.57581	11.13100
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.04157	0.55444	11.05900
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.03549	0.84592	11.14300

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)**	0.02587	0.67283	9.70762
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.04305	0.45211	9.38109
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.02202	0.58597	9.58499
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.02424	0.54973	9.58147
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.02463	0.51870	9.58039
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.03108	0.49053	9.61694
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.03703	0.46793	9.51263
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02895	0.71383	9.47480

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	0.00615	0.00635	0.00648
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.05334	0.05826	0.07743
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01105	0.01189	0.01536
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.01691	0.01698	0.02344
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.02182	0.02352	0.03062
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.03233	0.03471	0.03752
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.04280	0.04849	0.06152
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00477	0.00485	0.00279

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	-0.00136	-0.00124	-0.00075
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	-0.02206	-0.02060	-0.01271
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	-0.00429	-0.00382	-0.00276
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	-0.00576	-0.00537	-0.00333
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	-0.00879	-0.00801	-0.00534
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	-0.01342	-0.01237	-0.00783
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	-0.01805	-0.01675	-0.01036
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	-0.00097	-0.00092	-0.00052

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.45363	0.45378	0.01083	0.45697

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	0.14538	0.14570

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)	-	0.01877	0.35075	3.61373
	A1->Y (RR)	-	0.01994	0.35083	3.61813
	S0->Y (RR)	(!A0 * A1)	0.05565	0.33731	1.59722
	S0->Y (FR)	(A0 * !A1)	0.04565	0.44044	3.56384

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)	-	0.01638	0.33167	3.35780
	A1->Y (FF)	-	0.01605	0.33005	3.34951
	S0->Y (FF)	(!A0 * A1)	0.07059	0.39806	2.23444
	S0->Y (RF)	(A0 * !A1)	0.03060	0.37343	2.96758

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	-	-0.00645	-0.00646	-0.00646
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00451	-0.00451	-0.00451
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00721	0.00766	0.02621
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00441	-0.00484	0.01119

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	-	0.00645	0.00646	0.00646
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00451	0.00451	0.00451
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00126	0.00097	0.01757
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01654	0.01686	0.03475

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)	-0.00166	-0.00165	-0.00165

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)	0.00166	0.00165	0.00165

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)	-0.00196	-0.00195	-0.00196

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)	0.00196	0.00195	0.00196

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)	-0.00160	-0.00188	0.01441
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00155	-0.00201	0.01461

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)	0.01246	0.01294	0.03076
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01130	0.01188	0.03017

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00535	0.00531	2.03306
sky130_osu_sc_18T_ms__nand2_l	0.00414	0.00411	1.42455

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	0.07252	0.28909
sky130_osu_sc_18T_ms__nand2_l	0.00000	0.05047	0.20142

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)	0.03188	0.73976	10.15490
	B->Y (FR)	0.03759	0.73834	10.05190
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.03602	0.81001	10.31220
	B->Y (FR)	0.04288	0.81290	10.27200

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)	0.03698	0.79896	11.10800
	B->Y (RF)	0.04235	0.78710	10.81850
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.04203	0.87022	11.11000
	B->Y (RF)	0.04720	0.86262	10.81370

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	0.00653	0.00672	0.00894
	B	0.00000	0.00000	0.00000
	B	0.00826	0.00834	0.01043
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00503	0.00511	0.00647
	B	0.00000	0.00000	0.00000
	B	0.00629	0.00630	0.00765

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	-0.00090	-0.00093	-0.00041
	B	0.00000	0.00000	0.00000
	B	-0.00084	-0.00096	-0.00059
sky130_osu_sc_18T_ms__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00069	-0.00072	-0.00032
	B	0.00000	0.00000	0.00000
	B	-0.00066	-0.00074	-0.00046

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)	-0.00452	-0.00455	-0.00455
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00332	-0.00334	-0.00334

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)	0.00454	0.00458	0.00456
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00333	0.00336	0.00335

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)	-0.00421	-0.00422	-0.00422
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00309	-0.00310	-0.00309

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)	0.00424	0.00427	0.00423
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00311	0.00313	0.00310

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00535	0.00565	1.24929
sky130_osu_sc_18T_ms__nor2_l	0.00406	0.00440	0.86367

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	0.05013	0.14455
sky130_osu_sc_18T_ms__nor2_l	0.00000	0.03709	0.10071

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)	0.06533	0.92277	11.00500
	B->Y (FR)	0.04949	0.89225	10.87080
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.07333	1.01372	10.99380
	B->Y (FR)	0.05933	0.99380	11.00910

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)	0.03486	0.56766	6.91532
	B->Y (RF)	0.02745	0.55435	6.89505
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.03749	0.60152	6.82772
	B->Y (RF)	0.03060	0.58958	6.81038

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	0.00886	0.00878	0.00946
	B	0.00000	0.00000	0.00000
	B	0.00671	0.00674	0.00945
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00651	0.00644	0.00691
	B	0.00000	0.00000	0.00000
	B	0.00514	0.00515	0.00675

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	0.00099	0.00075	0.00141
	B	0.00000	0.00000	0.00000
	B	-0.00107	-0.00097	-0.00035
sky130_osu_sc_18T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00065	0.00048	0.00106
	B	0.00000	0.00000	0.00000
	B	-0.00072	-0.00066	-0.00015

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)	-0.00343	-0.00402	-0.00406
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00249	-0.00286	-0.00289

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)	0.00402	0.00406	0.00406
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00287	0.00289	0.00289

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)	-0.00199	-0.00201	-0.00200
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00148	-0.00149	-0.00149

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)	0.00210	0.00212	0.00204
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00156	0.00157	0.00151

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00539	0.00545	0.00458	1.26617

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	0.06301	0.24526

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)	0.06651	0.91965	11.04830
	A1->Y (FR)	0.08653	0.95504	11.19330
	B0->Y (FR)	0.04416	0.77991	9.59972

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)	0.05290	0.71192	8.50568
	A1->Y (RF)	0.06341	0.70589	8.29126
	B0->Y (RF)	0.04100	0.73047	9.02066

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	0.00914	0.00913	0.01145
	A1	0.00000	0.00000	0.00000
	A1	0.01130	0.01117	0.01173
	B0	0.00769	0.00773	0.00933

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	0.00029	0.00012	0.00052
	A1	0.00000	0.00000	0.00000
	A1	0.00231	0.00196	0.00234
	B0	0.00308	0.00301	0.00351

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)	-0.00200	-0.00201	-0.00201
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00399	-0.00405	-0.00406
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00413	-0.00414	-0.00413

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)	0.00211	0.00212	0.00204
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00403	0.00405	0.00406
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00413	0.00417	0.00415

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)	-0.00337	-0.00395	-0.00399
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00395	-0.00405	-0.00403
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00408	-0.00410	-0.00410

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)	0.00396	0.00403	0.00399
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00401	0.00408	0.00403
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00409	0.00414	0.00411

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)	-0.00337	-0.00340	-0.00344

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)	0.00344	0.00347	0.00345

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00523	0.00550	0.00565	0.00553	1.23838

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	0.07518	0.28909

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)	0.09401	0.95152	10.99690
	A1->Y (FR)	0.07811	0.91904	10.86500
	B0->Y (FR)	0.05570	0.89714	10.85860
	B1->Y (FR)	0.07211	0.92932	10.99560

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)	0.09108	0.76347	8.57212
	A1->Y (RF)	0.07232	0.73277	8.44869
	B0->Y (RF)	0.06051	0.74891	8.93864
	B1->Y (RF)	0.08072	0.79092	9.19164

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	0.01471	0.01458	0.01515
	A1	0.01254	0.01251	0.01475
	B0	0.00935	0.00944	0.01169
	B1	0.01162	0.01152	0.01213

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00379	0.00345	0.00379
	A1	0.00194	0.00168	0.00202
	B0	-0.00044	-0.00041	0.00017
	B1	0.00382	0.00349	0.00405

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)	-0.00343	-0.00401	-0.00406
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00342	-0.00401	-0.00406
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00396	-0.00405	-0.00404
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00410	-0.00413	-0.00410

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)	0.00402	0.00406	0.00406
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00402	0.00406	0.00406
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00402	0.00406	0.00404
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00410	0.00415	0.00412

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)	-0.00198	-0.00200	-0.00199
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00198	-0.00200	-0.00199
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00395	-0.00403	-0.00402
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00408	-0.00411	-0.00409

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)	0.00209	0.00211	0.00203
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00209	0.00211	0.00203
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00399	0.00403	0.00402
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00409	0.00413	0.00411

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)	-0.00197	-0.00199	-0.00198
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00197	-0.00199	-0.00198
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00439	-0.00447	-0.00444
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00441	-0.00443	-0.00451

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)	0.00209	0.00210	0.00201
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00208	0.00210	0.00201
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00443	0.00447	0.00444
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00451	0.00455	0.00453

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)	-0.00339	-0.00396	-0.00400
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00340	-0.00396	-0.00400
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00445	-0.00453	-0.00452
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00447	-0.00450	-0.00457

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)	0.00397	0.00400	0.00400
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00397	0.00400	0.00400
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00451	0.00455	0.00452
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00457	0.00461	0.00459

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00568	0.00547	2.49598
sky130_osu_sc_18T_ms__or2_2	0.00568	0.00547	4.84471
sky130_osu_sc_18T_ms__or2_4	0.00568	0.00548	9.25843
sky130_osu_sc_18T_ms__or2_8	0.00568	0.00549	17.46865
sky130_osu_sc_18T_ms__or2_l	0.00447	0.00422	1.72175

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	0.08663	0.14552
sky130_osu_sc_18T_ms__or2_2	0.00000	0.12313	0.29006
sky130_osu_sc_18T_ms__or2_4	0.00000	0.19613	0.57915
sky130_osu_sc_18T_ms__or2_8	0.00000	0.34213	1.15732
sky130_osu_sc_18T_ms__or2_l	0.00000	0.06242	0.10110

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)	0.07649	0.66097	7.11812
	B->Y (RR)	0.06686	0.62376	7.04260
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.08508	0.60436	7.22041
	B->Y (RR)	0.07514	0.57291	7.14152
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.11115	0.60860	7.55825
	B->Y (RR)	0.10100	0.58488	7.47698
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.15973	0.66729	8.03087
	B->Y (RR)	0.14934	0.65094	7.95939
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.08469	0.73975	7.20367
	B->Y (RR)	0.07529	0.70485	7.12775

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)	0.12506	0.73437	7.18248
	B->Y (FF)	0.10391	0.68332	6.96208
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.14972	0.71360	7.33396
	B->Y (FF)	0.12873	0.67385	7.07188
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.21049	0.76367	7.70884
	B->Y (FF)	0.18954	0.73462	7.42990
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.33368	0.89475	8.10999
	B->Y (FF)	0.31279	0.86639	7.83889
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.13826	0.79296	7.08032
	B->Y (FF)	0.11742	0.75322	6.88769

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	0.00687	0.00612	0.01307
	B	0.00000	0.00000	0.00000
	B	0.00494	0.00456	0.01562
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01179	0.01145	0.01854
	B	0.00000	0.00000	0.00000
	B	0.00979	0.00987	0.02027
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02233	0.02289	0.02905
	B	0.00000	0.00000	0.00000
	B	0.02034	0.02119	0.03070
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.04376	0.04516	0.05328
	B	0.00000	0.00000	0.00000
	B	0.04154	0.04368	0.05450
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00510	0.00449	0.00983
	B	0.00000	0.00000	0.00000
	B	0.00381	0.00352	0.01138

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	0.01434	0.01427	0.02056
	B	0.00000	0.00000	0.00000
	B	0.01191	0.01258	0.02850
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01749	0.01811	0.02413
	B	0.00000	0.00000	0.00000
	B	0.01505	0.01643	0.03142
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02551	0.02718	0.03303
	B	0.00000	0.00000	0.00000
	B	0.02312	0.02514	0.03947
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.04362	0.04456	0.05118
	B	0.00000	0.00000	0.00000
	B	0.04040	0.04322	0.05672
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01095	0.01078	0.01531
	B	0.00000	0.00000	0.00000
	B	0.00924	0.00974	0.01996

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)	-0.00346	-0.00404	-0.00408
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00345	-0.00404	-0.00408
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00345	-0.00404	-0.00408
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00345	-0.00404	-0.00408
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00250	-0.00287	-0.00290

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)	0.00404	0.00405	0.00408
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00404	0.00404	0.00408
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00404	0.00404	0.00408
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00404	0.00412	0.00408
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00288	0.00291	0.00290

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)	-0.00200	-0.00202	-0.00201
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00200	-0.00202	-0.00201
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00200	-0.00202	-0.00201
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00200	-0.00202	-0.00201
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00150	-0.00152	-0.00151

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)	0.00213	0.00213	0.00205
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00213	0.00213	0.00205
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00213	0.00214	0.00205
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00213	0.00214	0.00205
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00160	0.00160	0.00154

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00565	0.00716	1.29965
sky130_osu_sc_18T_ms__tbufi_l	0.00441	0.00561	0.86224

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	0.07284	0.28909
sky130_osu_sc_18T_ms__tbufi_l	0.00000	0.05060	0.20143

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)	0.04725	0.90169	11.13590
	OE->Y (FR)	0.05078	0.36128	4.73387
	OE->Y (RR)	0.08868	0.77195	7.36552
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.05696	0.99294	11.01150
	OE->Y (FR)	0.05470	0.36111	4.73365
	OE->Y (RR)	0.09841	0.86093	7.17357

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)	0.03599	0.68432	8.53861
	OE->Y (FF)	0.05125	0.36126	4.73386
	OE->Y (RF)	0.03507	0.66644	8.20549
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.04145	0.72694	8.28570
	OE->Y (FF)	0.05552	0.36106	4.73365
	OE->Y (RF)	0.04089	0.71088	7.93589

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	0.00627	0.00641	0.00877
	OE	0.00000	0.00000	0.00000
	OE	0.00630	0.00617	0.02035
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00482	0.00485	0.00629
	OE	0.00000	0.00000	0.00000
	OE	0.00452	0.00425	0.01427

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	-0.00108	-0.00098	-0.00041
	OE	0.00000	0.00000	0.00000
	OE	0.00425	0.00389	0.02068
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00072	-0.00068	-0.00021
	OE	0.00000	0.00000	0.00000
	OE	0.00299	0.00270	0.01374

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)	-0.00323	-0.00329	-0.00324
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00285	-0.00289	-0.00287
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00248	-0.00250	-0.00249
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00223	-0.00226	-0.00224

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)	0.00323	0.00329	0.00324
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00294	0.00297	0.00291
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00248	0.00250	0.00249
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00229	0.00231	0.00226

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)	0.00249	0.00220	0.01924
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00220	0.00211	0.01888
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00172	0.00148	0.01272
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00152	0.00144	0.01247

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)	0.00732	0.00742	0.02569
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00729	0.00756	0.02580
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00577	0.00573	0.01758
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00579	0.00583	0.01766

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.00565	0.00884	1.29375
sky130_osu_sc_18T_ms__tnbufi_l	0.00440	0.00666	0.86229

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	0.12086	0.14503
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	0.08411	0.10091

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)	0.04767	0.90020	11.10390
	OE->Y (RR)	0.03190	0.36231	4.73498
	OE->Y (FR)	0.06165	0.92996	11.24670
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.05750	0.99297	11.01190
	OE->Y (RR)	0.03372	0.36261	4.73526
	OE->Y (FR)	0.06948	1.01072	10.99740

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)	0.03551	0.68301	8.51768
	OE->Y (RF)	0.03164	0.36232	4.73494
	OE->Y (FF)	0.06186	0.58569	5.54444
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.04083	0.72674	8.28576
	OE->Y (RF)	0.03349	0.36260	4.73528
	OE->Y (FF)	0.07059	0.64518	5.34683

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	0.00642	0.00656	0.00893
	OE	0.00000	0.00000	0.00000
	OE	0.01569	0.01652	0.03563
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00498	0.00500	0.00645
	OE	0.00000	0.00000	0.00000
	OE	0.01176	0.01217	0.02470

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	-0.00129	-0.00117	-0.00059
	OE	0.00000	0.00000	0.00000
	OE	0.01390	0.01472	0.03226
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00092	-0.00087	-0.00039
	OE	0.00000	0.00000	0.00000
	OE	0.01040	0.01078	0.02197

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)	-0.00279	-0.00283	-0.00280
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00244	-0.00247	-0.00245
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00206	-0.00209	-0.00207
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00183	-0.00185	-0.00184

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)	0.00279	0.00283	0.00280
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00252	0.00254	0.00249
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00206	0.00209	0.00207
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00188	0.00190	0.00186

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)	-0.00476	-0.00555	0.01233
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00479	-0.00535	0.01236
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00340	-0.00397	0.00778
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00341	-0.00386	0.00780

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)	0.01187	0.01283	0.03176
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01166	0.01260	0.03156
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00894	0.00941	0.02182
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00880	0.00925	0.02166

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_ms__xnor2_l	0.01116	0.01019	1.31136

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	0.24443	0.43412

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	0.11257	0.81381	7.48698
	A->Y (FR)	!B	0.06227	0.91874	11.15550
	B->Y (RR)	A	0.08966	0.78695	7.46207
	B->Y (FR)	!A	0.08552	0.95356	11.30460

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	0.10786	0.69251	6.01554
	A->Y (RF)	!B	0.05316	0.69816	8.45272
	B->Y (FF)	A	0.09425	0.67951	6.01585
	B->Y (RF)	!A	0.06582	0.71405	8.45797

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	0.00619	0.00565	0.01936
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01545	0.01578	0.03629
	B	A	0.00000	0.00000	0.00000
	B	A	0.00206	0.00186	0.01846
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01705	0.01740	0.03599

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	0.01932	0.01902	0.03661
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00418	0.00360	0.02003
	B	A	0.00000	0.00000	0.00000
	B	A	0.01737	0.01805	0.03634
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00562	0.00490	0.02125

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
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	0.01116	0.01024	1.28273

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	0.24443	0.39576

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	0.10737	0.79238	7.35191
	A->Y (FR)	B	0.07700	0.94109	11.22410
	B->Y (RR)	!A	0.09254	0.78464	7.36374
	B->Y (FR)	A	0.08368	0.94837	11.21000

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	0.09442	0.66373	5.69402
	A->Y (RF)	B	0.05116	0.70605	8.48999
	B->Y (FF)	!A	0.08804	0.65717	5.72697
	B->Y (RF)	A	0.06121	0.69188	8.16066

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	0.01805	0.01854	0.03762
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00323	0.00199	0.01804
	B	A	0.00000	0.00000	0.00000
	B	A	0.01861	0.01913	0.03803
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00184	0.00151	0.01817

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	0.00378	0.00323	0.01989
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01954	0.02008	0.03702
	B	A	0.00000	0.00000	0.00000
	B	A	0.00382	0.00303	0.01960
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01763	0.01847	0.03680

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_tt_1P62_25C.ccs
Cell Library: Process , Voltage 1.62,
Temp 25.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__ant	6.59340
sky130_osu_sc_18T_ms__tiehi	6.59340
sky130_osu_sc_18T_ms__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_ms__ant	0.68665
sky130_osu_sc_18T_ms__tiehi	0.00000
sky130_osu_sc_18T_ms__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__ant	0.00000	274720.00000	549440.00000
sky130_osu_sc_18T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__ant	0.00000	0.00000	0.00000
	-0.00206	0.07151	0.91955

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__ant	0.00000	0.00000	0.00000
	4.78006	4.51334	1.13028