sky130_osu_sc_18T_ms_ff_1P95_150C.ccs Library

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

SKY130_OSU_SC_18T_MS__ADDFx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.02129	0.02110	0.01599	3.56337	1.97293	3.62808
sky130_osu_sc_18T_ms__addf_l	0.02127	0.02108	0.01598	2.64616	1.97817	2.72061

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	2778.09000	3479.09000
sky130_osu_sc_18T_ms__addf_l	0.00000	2208.81000	2909.76000

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)	0.11145	1.37751	23.65450
	B->CO (RR)	0.11157	1.34282	22.71370
	CI->CO (RR)	0.10624	1.42424	24.35710
	CON->CO (FR)	0.01786	0.49615	8.30680
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.11600	1.37479	21.15820
	B->CO (RR)	0.11610	1.34546	20.48880
	CI->CO (RR)	0.11077	1.42286	21.87780
	CON->CO (FR)	0.02096	0.59816	9.21913

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)	0.11958	1.47436	25.58450
	B->CO (FF)	0.10519	1.44098	24.94290
	CI->CO (FF)	0.10390	1.50683	26.19670
	CON->CO (RF)	0.02161	0.60537	10.16890
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.11666	1.38387	21.43070
	B->CO (FF)	0.10271	1.36134	21.12240
	CI->CO (FF)	0.10097	1.41761	22.08380
	CON->CO (RF)	0.02344	0.64342	10.02140

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)	0.08308	0.59562	7.79193
	B->CON (FR)	0.06988	0.60026	7.97036
	CI->CON (FR)	0.06740	0.63191	8.47873
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.07926	0.59240	7.80399
	B->CON (FR)	0.06639	0.59742	7.98217
	CI->CON (FR)	0.06356	0.62864	8.49039

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)	0.08720	0.65181	8.55464
	B->CON (RF)	0.08764	0.65902	8.59861
	CI->CON (RF)	0.08199	0.70068	9.30595
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.08369	0.64914	8.56790
	B->CON (RF)	0.08441	0.65665	8.61021
	CI->CON (RF)	0.07847	0.69799	9.31894

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)	0.17602	1.32854	21.14800
	B->S (-R)	0.19381	1.31540	20.09380
	CI->S (-R)	0.15905	1.35868	21.76550
	CON->S (RR)	0.06014	0.49575	7.12152
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.17256	1.28038	18.48610
	B->S (-R)	0.16442	1.25041	17.79300
	CI->S (-R)	0.15549	1.31235	19.12800
	CON->S (RR)	0.06219	0.56275	7.71404

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)	0.17906	1.41092	22.14500
	B->S (-F)	0.16618	1.34377	21.23350
	CI->S (-F)	0.17522	1.45985	22.85090
	CON->S (FF)	0.06879	0.54279	7.83425
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.17056	1.33839	19.05870
	B->S (-F)	0.15828	1.28143	18.41180
	CI->S (-F)	0.16662	1.38827	19.78400
	CON->S (FF)	0.06705	0.58382	7.90670

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	0.04545	0.06127	0.36869
	B	0.05147	0.06539	0.33869
	CI	0.04943	0.06574	0.37136
sky130_osu_sc_18T_ms__addf_l	A	0.03469	0.04677	0.25691
	B	0.04108	0.05178	0.23984
	CI	0.03857	0.05116	0.25980

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.07241	0.08938	0.42425
	B	0.06405	0.07790	0.37565
	CI	0.06926	0.08681	0.42274
sky130_osu_sc_18T_ms__addf_l	A	0.05841	0.07185	0.31245
	B	0.05121	0.06338	0.28087
	CI	0.05523	0.06954	0.31227

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.05433	0.06689	0.27769
	B	0.04909	0.06065	0.25646
	CI	0.05187	0.06523	0.27993
sky130_osu_sc_18T_ms__addf_l	A	0.04734	0.05914	0.25439
	B	0.04223	0.05315	0.23552
	CI	0.04472	0.05736	0.25611

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.03305	0.04487	0.23999
	B	0.03639	0.04704	0.22306
	CI	0.03737	0.04955	0.24611
sky130_osu_sc_18T_ms__addf_l	A	0.02609	0.03666	0.20847
	B	0.02995	0.03934	0.19407
	CI	0.03025	0.04109	0.21312

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.04796	0.06021	0.41020
	B	0.07847	0.09247	0.34603
	CI	0.05607	0.06976	0.37856
sky130_osu_sc_18T_ms__addf_l	A	0.04803	0.06122	0.41483
	B	0.06694	0.08238	0.35941
	CI	0.05604	0.07056	0.38287

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.14223	0.15868	0.45914
	B	0.10770	0.12556	0.44826
	CI	0.10118	0.11742	0.39283
sky130_osu_sc_18T_ms__addf_l	A	0.12497	0.14269	0.46084
	B	0.07450	0.09397	0.42997
	CI	0.08406	0.10135	0.39375

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.01031	0.01137	3.70885	2.08641	3.76778
sky130_osu_sc_18T_ms__addh_l	0.01031	0.01137	2.37977	2.09640	2.39296

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__addh_1	0.00000	3063.93000	3493.39000
sky130_osu_sc_18T_ms__addh_l	0.00000	2721.51000	3219.93000

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)	0.07164	0.51909	7.20676
	B->CO (RR)	0.07477	0.51021	7.30860
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.07191	0.59592	7.72191
	B->CO (RR)	0.07502	0.58435	7.69001

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)	0.05745	0.49331	7.54104
	B->CO (FF)	0.06246	0.51624	7.78695
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.05793	0.55998	7.55958
	B->CO (FF)	0.06271	0.58402	7.81947

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	0.09663	0.44664	4.59907
	A->CON (FR)	!B	0.04371	0.58269	8.19071
	B->CON (RR)	A	0.09872	0.43699	4.69076
	B->CON (FR)	!A	0.05678	0.56027	7.72691
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.08727	0.43566	4.70621
	A->CON (FR)	!B	0.03925	0.57812	8.21278
	B->CON (RR)	A	0.08942	0.42386	4.68410
	B->CON (FR)	!A	0.05229	0.55612	7.74963

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	0.09982	0.55203	6.35637
	A->CON (RF)	!B	0.05127	0.66620	9.36075
	B->CON (FF)	A	0.09581	0.59501	7.02896
	B->CON (RF)	!A	0.06159	0.64692	8.88410
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.09055	0.52801	6.21278
	A->CON (RF)	!B	0.04691	0.66248	9.38232
	B->CON (FF)	A	0.08665	0.57118	6.87679
	B->CON (RF)	!A	0.05730	0.64367	8.90761

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	0.07515	1.39630	25.01200
	A->S (FR)	B	0.12439	1.27877	21.94040
	B->S (RR)	!A	0.08617	1.35245	23.88260
	B->S (FR)	A	0.12013	1.34728	23.26140
	CON->S (FR)	-	0.02015	0.53237	8.95053
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.07475	1.30558	19.91520
	A->S (FR)	B	0.11958	1.16903	16.66640
	B->S (RR)	!A	0.08630	1.27314	19.14510
	B->S (FR)	A	0.11495	1.22818	17.64480
	CON->S (FR)	-	0.02269	0.61487	9.28666

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	0.07446	1.40649	25.43710
	A->S (RF)	B	0.12474	1.11092	18.12290
	B->S (FF)	!A	0.08755	1.38902	25.05110
	B->S (RF)	A	0.12682	1.10109	18.20990
	CON->S (RF)	-	0.02066	0.60273	10.24600
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.07204	1.30092	19.94950
	A->S (RF)	B	0.11722	1.06049	14.77740
	B->S (FF)	!A	0.08511	1.27965	19.51970
	B->S (RF)	A	0.11934	1.04736	14.72300
	CON->S (RF)	-	0.02321	0.66576	10.11660

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	0.04028	0.04768	0.17495
	B	0.00000	0.00000	0.00000
	B	0.03909	0.04756	0.20708
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.03756	0.04515	0.17561
	B	0.00000	0.00000	0.00000
	B	0.03623	0.04452	0.19656

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	0.04291	0.05545	0.28016
	B	0.00000	0.00000	0.00000
	B	0.04863	0.06364	0.31305
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.03813	0.04827	0.21663
	B	0.00000	0.00000	0.00000
	B	0.04397	0.05592	0.23805

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	0.03043	0.03797	0.16409
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.04584	0.05438	0.17093
	B	A	0.00000	0.00000	0.00000
	B	A	0.02935	0.03781	0.19481
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.04697	0.05423	0.16370
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.02688	0.03454	0.16488
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.03681	0.04377	0.13409
	B	A	0.00000	0.00000	0.00000
	B	A	0.02567	0.03397	0.18630
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.03810	0.04368	0.12722

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	0.03964	0.05104	0.24052
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.05081	0.05994	0.18323
	B	A	0.00000	0.00000	0.00000
	B	A	0.04658	0.06015	0.26764
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.04249	0.05076	0.17073
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.03531	0.04537	0.21107
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.04536	0.05146	0.13086
	B	A	0.00000	0.00000	0.00000
	B	A	0.04213	0.05395	0.23295
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.03719	0.04273	0.12294

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	0.05373	0.06630	0.29274
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.07398	0.08432	0.24888
	B	A	0.00000	0.00000	0.00000
	B	A	0.06286	0.07793	0.32893
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.06240	0.07161	0.22172
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.04425	0.05439	0.22344
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.05952	0.06560	0.14503
	B	A	0.00000	0.00000	0.00000
	B	A	0.05205	0.06400	0.24696
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.04978	0.05533	0.13471

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	0.05177	0.05924	0.18784
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.06335	0.07234	0.20679
	B	A	0.00000	0.00000	0.00000
	B	A	0.05051	0.05896	0.21933
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.06518	0.07305	0.20304
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.04281	0.05031	0.18214
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.04510	0.05214	0.14079
	B	A	0.00000	0.00000	0.00000
	B	A	0.04141	0.04967	0.20269
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.04695	0.05250	0.13579

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00556	0.00572	3.80709
sky130_osu_sc_18T_ms__and2_2	0.00556	0.00572	7.36842
sky130_osu_sc_18T_ms__and2_4	0.00556	0.00573	14.14313
sky130_osu_sc_18T_ms__and2_6	0.00560	0.00574	20.94354
sky130_osu_sc_18T_ms__and2_8	0.00559	0.00576	27.31764
sky130_osu_sc_18T_ms__and2_l	0.00439	0.00452	2.67243

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	1458.61000	2328.41000
sky130_osu_sc_18T_ms__and2_2	0.00000	2333.70000	2336.19000
sky130_osu_sc_18T_ms__and2_4	0.00000	4082.31000	4667.85000
sky130_osu_sc_18T_ms__and2_6	0.00000	5830.63000	6999.38000
sky130_osu_sc_18T_ms__and2_8	0.00000	7576.97000	9329.05000
sky130_osu_sc_18T_ms__and2_l	0.00000	748.20100	1195.12000

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)	0.05482	0.48944	7.49336
	B->Y (RR)	0.05856	0.46315	6.98924
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.06416	0.45237	7.56348
	B->Y (RR)	0.06804	0.42351	7.01656
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.09036	0.46041	7.71951
	B->Y (RR)	0.09434	0.42996	7.16270
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.11789	0.48766	7.88235
	B->Y (RR)	0.12180	0.45464	7.31095
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.14476	0.52010	8.07917
	B->Y (RR)	0.14876	0.48498	7.47511
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.06215	0.54252	7.48137
	B->Y (RR)	0.06634	0.51821	7.04473

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)	0.04615	0.44493	7.17282
	B->Y (FF)	0.04812	0.45878	7.30576
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.05091	0.38117	7.05082
	B->Y (FF)	0.05365	0.39723	7.23261
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.06989	0.37227	7.09775
	B->Y (FF)	0.07280	0.38606	7.29589
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.09115	0.39327	7.19352
	B->Y (FF)	0.09399	0.40511	7.39449
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.11141	0.41490	7.15507
	B->Y (FF)	0.11451	0.42626	7.35657
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.05142	0.52781	7.36841
	B->Y (FF)	0.05430	0.54438	7.53292

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	0.06704	0.09371	0.51927
	B	0.00000	0.00000	0.00000
	B	0.06626	0.08711	0.43009
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.07740	0.10327	0.53804
	B	0.00000	0.00000	0.00000
	B	0.07661	0.09677	0.43922
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.10251	0.12533	0.57419
	B	0.00000	0.00000	0.00000
	B	0.10172	0.11746	0.45710
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.13939	0.15295	0.60464
	B	0.00000	0.00000	0.00000
	B	0.13861	0.14336	0.48207
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.18312	0.18570	0.64709
	B	0.00000	0.00000	0.00000
	B	0.18227	0.17333	0.50424
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.03682	0.05527	0.34743
	B	0.00000	0.00000	0.00000
	B	0.03652	0.05164	0.30017

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	0.04925	0.07767	0.47133
	B	0.00000	0.00000	0.00000
	B	0.05150	0.07957	0.46584
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.08745	0.11388	0.49829
	B	0.00000	0.00000	0.00000
	B	0.08980	0.11587	0.49148
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.17369	0.19058	0.55036
	B	0.00000	0.00000	0.00000
	B	0.17606	0.19248	0.54070
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.26406	0.27051	0.60515
	B	0.00000	0.00000	0.00000
	B	0.26672	0.27185	0.59263
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.36166	0.34981	0.66036
	B	0.00000	0.00000	0.00000
	B	0.36475	0.35149	0.64113
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.03023	0.04895	0.31237
	B	0.00000	0.00000	0.00000
	B	0.03202	0.05061	0.30895

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)	0.00326	0.00324	0.00320
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01343	0.01337	0.01334
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.03369	0.03364	0.03360
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.05392	0.05386	0.05382
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.07419	0.07414	0.07409
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00003	-0.00001	-0.00003

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)	0.01712	0.01718	0.01715
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.02729	0.02735	0.02732
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.04761	0.04767	0.04765
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.06796	0.06802	0.06800
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.08821	0.08828	0.08827
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01045	0.01049	0.01047

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)	0.00364	0.00356	0.00362
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01376	0.01369	0.01376
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.03400	0.03393	0.03400
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.05424	0.05417	0.05425
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.07444	0.07438	0.07446
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00029	0.00026	0.00028

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)	0.01699	0.01681	0.01675
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.02716	0.02698	0.02692
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.04748	0.04730	0.04723
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.06779	0.06761	0.06753
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.08808	0.08789	0.08781
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01035	0.01021	0.01018

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00536	0.00551	0.00531	1.88356

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	589.80200	1161.16000

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)	0.04586	0.54911	7.52223
	A1->Y (FR)	0.03927	0.52131	7.18466
	B0->Y (FR)	0.03246	0.58978	8.23957

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)	0.04811	0.57249	7.75637
	A1->Y (RF)	0.04415	0.60869	8.31064
	B0->Y (RF)	0.02720	0.57325	8.04248

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	0.01665	0.02514	0.15360
	A1	0.00000	0.00000	0.00000
	A1	0.01394	0.02302	0.14474
	B0	0.00949	0.02273	0.18522

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	0.03024	0.03518	0.11526
	A1	0.00000	0.00000	0.00000
	A1	0.03117	0.03710	0.12050
	B0	0.02530	0.03254	0.12142

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)	-0.00301	-0.00382	0.00249
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00394	0.00388	0.00392
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00616	-0.00620	-0.00617

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)	0.01637	0.01620	0.01450
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.01627	0.01633	0.01628
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00648	0.00631	0.00625

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)	-0.00296	-0.00377	0.00257
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00398	0.00397	0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00657	-0.00662	-0.00664

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)	0.01632	0.01618	0.01445
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.01620	0.01624	0.01620
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00667	0.00670	0.00669

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)	-0.00189	-0.00187	-0.00019

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)	0.01394	0.01355	0.00831

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__aoi22_1	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_ms__aoi22_1	0.00536	0.00551	0.00565	0.00543	1.80273

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi22_1	0.00000	654.48100	2301.66000

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)	0.05779	0.56234	7.45138
	A1->Y (FR)	0.05147	0.54440	7.26625
	B0->Y (FR)	0.03375	0.58148	7.99082
	B1->Y (FR)	0.03981	0.60610	8.28325

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)	0.06378	0.58030	7.54946
	A1->Y (RF)	0.05988	0.61358	8.11081
	B0->Y (RF)	0.03013	0.58449	8.08229
	B1->Y (RF)	0.03404	0.54785	7.51780

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	0.02082	0.02956	0.16642
	A1	0.01813	0.02655	0.15803
	B0	0.01028	0.02315	0.18466
	B1	0.01291	0.02571	0.18708

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.03535	0.04029	0.12663
	A1	0.03636	0.04225	0.13181
	B0	0.05348	0.05921	0.13372
	B1	0.05179	0.05676	0.12699

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)	-0.00214	-0.00267	0.01001
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.01381	0.01372	0.01381
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00615	-0.00618	-0.00616
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00615	-0.00618	-0.00616

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)	0.02622	0.02580	0.02181
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.02619	0.02623	0.02614
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00648	0.00631	0.00625
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00649	0.00631	0.00625

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)	-0.00208	-0.00261	0.01012
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.01379	0.01370	0.01384
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00656	-0.00661	-0.00663
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00656	-0.00661	-0.00663

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)	0.02623	0.02577	0.02181
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.02612	0.02615	0.02604
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00667	0.00670	0.00668
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00667	0.00670	0.00669

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)	-0.00178	-0.00176	-0.00051
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00768	0.00766	0.00770
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00673	-0.00675	-0.00679
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00672	-0.00675	-0.00680

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)	0.01432	0.01397	0.00882
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.01267	0.01264	0.01205
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00683	0.00688	0.00685
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00683	0.00688	0.00685

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)	-0.00179	-0.00177	-0.00053
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00767	0.00765	0.00768
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00624	-0.00629	-0.00625
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00624	-0.00629	-0.00626

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)	0.01433	0.01397	0.00884
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.01269	0.01266	0.01207
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00658	0.00640	0.00634
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00657	0.00640	0.00634

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00571	3.77819
sky130_osu_sc_18T_ms__buf_2	0.00572	7.29039
sky130_osu_sc_18T_ms__buf_4	0.00571	14.10411
sky130_osu_sc_18T_ms__buf_6	0.00096	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00574	27.95758
sky130_osu_sc_18T_ms__buf_l	0.00456	2.67171

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	1169.09000	1169.75000
sky130_osu_sc_18T_ms__buf_2	0.00000	1753.42000	2336.59000
sky130_osu_sc_18T_ms__buf_4	0.00000	2921.12000	4668.42000
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	5255.36000	9329.86000
sky130_osu_sc_18T_ms__buf_l	0.00000	599.55400	599.76100

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)**	0.04307	0.43090	6.72066
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.04838	0.38593	6.67632
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.06564	0.38769	6.82682
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.10241	0.43566	7.23675
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.04931	0.48456	6.78438

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)**	0.04372	0.45286	7.39439
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.04917	0.39226	7.31427
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.06821	0.38232	7.39611
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.10970	0.42599	7.63278
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.04957	0.53718	7.64876

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	0.03580	0.06169	0.44050
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.04398	0.07043	0.45383
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.06405	0.09162	0.47979
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.12459	0.14518	0.54086
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.02040	0.03894	0.31633

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	0.04828	0.07888	0.49840
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.08638	0.11497	0.52312
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.17259	0.19209	0.57581
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.36684	0.35473	0.67763
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.02973	0.04995	0.33116

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
	-0.00095	-0.00095	-0.00091

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
	0.00095	0.00095	0.00091

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00553	0.00540	0.01549	3.46390	3.42384
sky130_osu_sc_18T_ms__dffr_l	0.00553	0.00540	0.01549	2.63045	2.62216

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__dffr_1	0.00000	3685.43000	5925.30000
sky130_osu_sc_18T_ms__dffr_l	0.00000	3116.16000	5356.59000

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)	0.18860	1.09211	15.74320
	QN->Q (FR)	0.02112	0.58425	9.59913
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.18875	1.24792	16.94150
	QN->Q (FR)	0.02314	0.65523	10.09080

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)	0.19838	1.10908	16.24570
	QN->Q (RF)	0.02459	0.70133	11.67220
	RN->Q (FF)	0.15119	1.03066	15.60440
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.20367	1.25112	17.02830
	QN->Q (RF)	0.02545	0.72012	11.20330
	RN->Q (FF)	0.15704	1.17395	16.38450

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)	0.17206	0.56306	6.21960
	RN->QN (FR)	0.12470	0.48516	5.57393
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.17489	0.62760	6.75541
	RN->QN (FR)	0.12805	0.55029	6.11054

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)**	0.16790	0.65048	7.63116
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.16259	0.69323	7.80625

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)	-0.05634	-0.05524	-0.02267
	setup	CK (R)	0.15080	0.17653	0.20086
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.05660	-0.05524	-0.02325
	setup	CK (R)	0.15053	0.17655	0.20217

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)	-0.06929	-0.16665	-0.68188
	setup	CK (R)	0.09387	0.17918	2.28646
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06946	-0.16668	-0.64458
	setup	CK (R)	0.09372	0.17918	2.28635

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)	-0.05634	-0.05524	-0.02267
	setup	CK (R)	0.15080	0.17653	0.20086
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.05660	-0.05524	-0.02325
	setup	CK (R)	0.15053	0.17655	0.20217

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)	-0.06929	-0.16665	-0.68188
	setup	CK (R)	0.09387	0.17918	2.28646
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06946	-0.16668	-0.64458
	setup	CK (R)	0.09372	0.17918	2.28635

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)	0.12117	0.16585	0.81720
	removal	CK (R)	-0.03013	-0.03959	-0.19368
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.12054	0.16589	0.81104
	removal	CK (R)	-0.03013	-0.03959	-0.19368

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)	0.12117	0.16585	0.81720
	removal	CK (R)	-0.03013	-0.03959	-0.19368
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.12054	0.16589	0.81104
	removal	CK (R)	-0.03013	-0.03959	-0.19368

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 ()	0.08438	0.50781	13.33370
	min_pulse_width	RN ()	0.08438	0.50781	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.08438	0.50781	13.33370
	min_pulse_width	RN ()	0.08438	0.50781	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 ()	0.09964	0.50781	13.33370
	min_pulse_width	CK ()	0.10346	0.50781	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.09201	0.50781	13.33370
	min_pulse_width	CK ()	0.09964	0.50781	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 ()	0.19119	0.50781	13.33370
	min_pulse_width	CK ()	0.07675	0.50781	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.19119	0.50781	13.33370
	min_pulse_width	CK ()	0.07675	0.50781	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	0.09834	0.11831	0.38494
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.08939	0.11150	0.41783

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	0.09750	0.10831	0.29336
	RN	-0.00210	-0.17360	-3.29141
	RN	0.10072	0.11345	0.31591
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.08657	0.10034	0.34104
	RN	-0.00210	-0.14719	-2.49991
	RN	0.08968	0.10540	0.36104

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	0.07432	0.08514	0.27167
	RN	-0.00210	-0.17239	-3.23975
	RN	0.08201	0.09483	0.29580
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.06840	0.08218	0.32304
	RN	-0.00210	-0.14691	-2.48760
	RN	0.07552	0.09128	0.34728

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	0.08347	0.10347	0.36973
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.07389	0.09601	0.40068

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	0.03771	0.03709	0.04393
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.05626	0.07728	0.47642
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.04082	0.05996	0.41927
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.03276	0.03214	0.03898
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.05131	0.07233	0.47146
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.03586	0.05500	0.41431

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	0.05782	0.05763	0.05594
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.07594	0.09878	0.49299
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02917	0.05177	0.43044
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.05287	0.05268	0.05099
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.07099	0.09383	0.48803
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02421	0.04681	0.42548

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)	0.04538	0.07655	0.58538
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.05136	0.08466	0.64212
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)	0.04042	0.07159	0.58042
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04640	0.07973	0.63716

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)	0.03748	0.07251	0.59719
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.06681	0.10178	0.65753
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)	0.03252	0.06762	0.59224
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.06185	0.09682	0.65224

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)	0.04125	0.07180	0.57821
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03303	0.06616	0.63973
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03634	0.06673	0.57488
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.03630	0.06685	0.57325
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02807	0.06120	0.63477
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03138	0.06177	0.56992

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)	0.05586	0.09088	0.60729
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.08768	0.12185	0.80348
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.07378	0.10685	0.66643
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.09218	0.15279	0.96208
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.05654	0.09060	0.60802
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.05090	0.08592	0.60232
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.08272	0.11682	0.79852
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.06882	0.10189	0.66148
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.08723	0.14783	0.95710
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.05158	0.08564	0.60306

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00548	0.00540	0.01169	0.01573	3.72195	3.68666
sky130_osu_sc_18T_ms__dffsr_l	0.00548	0.00540	0.01168	0.01573	2.65567	2.62346

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffsr_1	0.00000	4305.94000	5926.81000
sky130_osu_sc_18T_ms__dffsr_l	0.00000	3736.15000	5357.30000

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)	0.19028	1.08946	16.18910
	QN->Q (FR)	0.02000	0.57116	9.56250
	RN->Q (RR)	0.15433	1.06298	16.32750
	SN->Q (FR)	0.13270	0.99986	15.47520
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.19548	1.25229	17.01910
	QN->Q (FR)	0.02308	0.65532	10.11890
	RN->Q (RR)	0.16007	1.22509	17.15840
	SN->Q (FR)	0.13718	1.15845	16.26630

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)	0.22966	1.14278	16.66390
	QN->Q (RF)	0.02265	0.66997	11.34450
	RN->Q (FF)	0.14741	1.02989	16.08600
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.23912	1.29725	17.21910
	QN->Q (RF)	0.02541	0.72190	11.26480
	RN->Q (FF)	0.15548	1.18341	16.64580

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)	0.20375	0.60142	6.42541
	RN->QN (FR)	0.12220	0.48884	5.84944
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.20978	0.66801	6.79292
	RN->QN (FR)	0.12664	0.55479	6.22140

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)	0.17015	0.64345	7.74609
	RN->QN (RF)	0.13425	0.61709	7.88741
	SN->QN (FF)	0.11319	0.55487	7.02325
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.16962	0.69265	7.74730
	RN->QN (RF)	0.13434	0.66673	7.88584
	SN->QN (FF)	0.11260	0.60088	7.03054

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)	-0.05428	-0.05434	0.00164
	setup	CK (R)	0.14906	0.17674	0.31095
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.05469	-0.05434	-0.00110
	setup	CK (R)	0.14510	0.17544	0.30396

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)	-0.08263	-0.17914	-0.39083
	setup	CK (R)	0.10970	0.19168	2.38224
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.08095	-0.17916	-0.41372
	setup	CK (R)	0.10970	0.19168	2.38403

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)	-0.05428	-0.05434	0.00164
	setup	CK (R)	0.14906	0.17674	0.31095
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.05469	-0.05434	-0.00110
	setup	CK (R)	0.14510	0.17544	0.30396

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)	-0.08263	-0.17914	-0.39083
	setup	CK (R)	0.10970	0.19168	2.38224
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.08095	-0.17916	-0.41372
	setup	CK (R)	0.10970	0.19168	2.38403

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)	0.10463	0.15244	0.90548
	removal	CK (R)	-0.01308	-0.01875	-0.09030
	hold	SN (R)	-0.10431	-0.20835	-0.86316
	setup	SN (R)	0.13024	0.26209	3.61553
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.10420	0.15135	0.90137
	removal	CK (R)	-0.01308	-0.01875	-0.09030
	hold	SN (R)	-0.10322	-0.20210	-0.84819
	setup	SN (R)	0.12847	0.25292	3.58942

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)	0.10463	0.15244	0.90548
	removal	CK (R)	-0.01308	-0.01875	-0.09030
	hold	SN (R)	-0.10431	-0.20835	-0.88021
	hold	SN (R)	-0.10477	-0.21043	-0.86316
	setup	SN (R)	0.13024	0.26024	3.45518
	setup	SN (R)	0.12572	0.26209	3.61553
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.10420	0.15135	0.90137
	removal	CK (R)	-0.01308	-0.01875	-0.09030
	hold	SN (R)	-0.10322	-0.20210	-0.86833
	hold	SN (R)	-0.10443	-0.20418	-0.84819
	setup	SN (R)	0.12847	0.25012	3.43822
	setup	SN (R)	0.12002	0.25292	3.58942

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 ()	0.09964	0.50781	13.33370
	min_pulse_width	RN ()	0.09964	0.50781	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.09583	0.50781	13.33370
	min_pulse_width	RN ()	0.09583	0.50781	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)	0.03714	0.06999	2.09674
	removal	CK (R)	-0.02056	-0.04584	-0.25807
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03668	0.06881	2.09622
	removal	CK (R)	-0.01972	-0.04584	-0.25807

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)	0.03714	0.06999	2.09674
	removal	CK (R)	-0.02056	-0.04584	-0.25807
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.03668	0.06881	2.09622
	removal	CK (R)	-0.01972	-0.04584	-0.25807

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 ()	0.10727	0.50781	13.33370
	min_pulse_width	SN ()	0.10346	0.50781	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.10727	0.50781	13.33370
	min_pulse_width	SN ()	0.09964	0.50781	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 ()	0.09583	0.50781	13.33370
	min_pulse_width	CK ()	0.11490	0.50781	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.09201	0.50781	13.33370
	min_pulse_width	CK ()	0.11490	0.50781	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 ()	0.18738	0.50781	13.33370
	min_pulse_width	CK ()	0.09583	0.50781	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.18738	0.50781	13.33370
	min_pulse_width	CK ()	0.09583	0.50781	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	0.10287	0.12485	0.43829
	RN	0.12172	0.13839	0.42671
	SN	-0.00210	-0.18125	-3.53689
	SN	0.08861	0.10542	0.36690
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.09446	0.11610	0.42452
	RN	0.11333	0.12962	0.41469
	SN	-0.00210	-0.14804	-2.52390
	SN	0.07902	0.09553	0.35230

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	0.12443	0.13557	0.33445
	RN	-0.00210	-0.18125	-3.53688
	RN	0.12763	0.14198	0.38070
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.11411	0.12766	0.36929
	RN	-0.00210	-0.14804	-2.52388
	RN	0.11729	0.13382	0.41725

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	0.09471	0.10589	0.30510
	RN	-0.00210	-0.18022	-3.49277
	RN	0.10358	0.11782	0.35685
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.08895	0.10246	0.34511
	RN	-0.00210	-0.14696	-2.48878
	RN	0.09742	0.11397	0.39671

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	0.08831	0.11038	0.42208
	RN	0.10717	0.12388	0.41202
	SN	-0.00210	-0.18022	-3.50298
	SN	0.07955	0.09649	0.35775
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.07845	0.10008	0.40740
	RN	0.09737	0.11365	0.39754
	SN	-0.00210	-0.14696	-2.49304
	SN	0.06986	0.08643	0.34226

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	0.04403	0.04401	0.04403
	(!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)	0.06544	0.08629	0.49391
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.04350	0.06274	0.42876
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.04747	0.06601	0.42312
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.05667	0.07553	0.43647
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.03907	0.03905	0.03907
	(!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)	0.06048	0.08133	0.48895
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.03854	0.05778	0.42380
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.04251	0.06105	0.41817
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.05171	0.07057	0.43156

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	0.05660	0.05649	0.05636
	(!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)	0.08262	0.10477	0.50374
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.04451	0.06638	0.43936
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.03220	0.05440	0.43450
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.04866	0.07085	0.44709
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.05164	0.05153	0.05139
	(!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)	0.07765	0.09980	0.49877
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.03954	0.06142	0.43438
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02723	0.04943	0.42953
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.04369	0.06588	0.44212

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)	0.05764	0.08835	0.59243
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.06063	0.09482	0.66726
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)	0.05268	0.08340	0.58748
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.05567	0.08987	0.66231

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)	0.03792	0.07373	0.60217
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.07253	0.10779	0.67511
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)	0.03294	0.06877	0.59720
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.06755	0.10281	0.67014

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)	0.02835	0.02822	0.02819
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01300	0.01135	0.02390
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.02539	0.02447	0.03087
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.05527	0.07274	0.42209
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)	0.02340	0.02328	0.02324
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00806	0.00641	0.01896
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.02044	0.01951	0.02591
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.05033	0.06780	0.41714

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)	0.05592	0.05597	0.05593
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.05457	0.05431	0.05084
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.05923	0.05912	0.05736
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.05622	0.07540	0.44311
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)	0.05095	0.05100	0.05096
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.04959	0.04932	0.04586
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.05426	0.05415	0.05239
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.05124	0.07042	0.43813

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)	0.04126	0.07182	0.57879
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03619	0.06941	0.64474
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.05280	0.08572	0.65702
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.04812	0.07852	0.58706
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.06009	0.11356	0.99608
sky130_osu_sc_18T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.03631	0.06687	0.57380
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03121	0.06444	0.63981
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.04782	0.08075	0.65205
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.04316	0.07356	0.58210
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.05514	0.10860	0.99108

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)	0.09879	0.13325	0.81697
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.05594	0.09096	0.60794
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.08020	0.11312	0.67085
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.08924	0.12235	0.68386
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.10392	0.16371	0.97417
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.06807	0.10214	0.61995
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.05851	0.11936	1.02610
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.09383	0.12829	0.81201
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.05098	0.08600	0.60294
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.07523	0.10816	0.66589
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.08428	0.11739	0.67890
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.09894	0.15876	0.96914
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.06311	0.09718	0.61499
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.05353	0.11439	1.02105

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00551	0.00943	0.01550	3.48023	3.44030
sky130_osu_sc_18T_ms__dffs_l	0.00551	0.00943	0.01550	2.65456	2.62828

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	3653.58000	4756.83000
sky130_osu_sc_18T_ms__dffs_l	0.00000	3084.53000	4187.98000

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)	0.15510	1.04858	15.62240
	QN->Q (FR)	0.02096	0.57942	9.52979
	SN->Q (FR)	0.11103	1.00822	15.31660
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.15783	1.21255	16.91510
	QN->Q (FR)	0.02300	0.65282	10.08030
	SN->Q (FR)	0.11422	1.16693	16.59210

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)	0.21853	1.13638	16.30550
	QN->Q (RF)	0.02442	0.70073	11.65420
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.22375	1.28126	17.17380
	QN->Q (RF)	0.02532	0.72000	11.23360

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)	0.19140	0.58934	6.24712
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.19431	0.65271	6.77681

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)	0.13501	0.60864	7.51337
	SN->QN (FF)	0.09085	0.56842	7.21073
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.13278	0.65519	7.67954
	SN->QN (FF)	0.08903	0.60988	7.35771

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)	-0.04783	-0.04510	0.01175
	setup	CK (R)	0.11693	0.15040	0.41717
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04486	-0.04519	0.01037
	setup	CK (R)	0.11630	0.15013	0.48717

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)	-0.07300	-0.16868	0.06185
	setup	CK (R)	0.09994	0.18335	2.35763
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.07326	-0.16868	0.11978
	setup	CK (R)	0.09994	0.18335	2.35761

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)	-0.04783	-0.04510	0.01175
	setup	CK (R)	0.11693	0.15040	0.41717
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.04486	-0.04519	0.01037
	setup	CK (R)	0.11630	0.15013	0.48717

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)	-0.07300	-0.16868	0.06185
	setup	CK (R)	0.09994	0.18335	2.35763
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.07326	-0.16868	0.11978
	setup	CK (R)	0.09994	0.18335	2.35761

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)	0.03435	0.06267	1.50171
	removal	CK (R)	-0.01768	-0.04167	-0.22439
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.03307	0.06267	1.49362
	removal	CK (R)	-0.01768	-0.04167	-0.22439

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)	0.03435	0.06267	1.50171
	removal	CK (R)	-0.01768	-0.04167	-0.22439
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.03307	0.06267	1.49362
	removal	CK (R)	-0.01768	-0.04167	-0.22439

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 ()	0.07675	0.50781	13.33370
	min_pulse_width	SN ()	0.07675	0.50781	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.07675	0.50781	13.33370
	min_pulse_width	SN ()	0.07294	0.50781	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 ()	0.07675	0.50781	13.33370
	min_pulse_width	CK ()	0.11108	0.50781	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.07675	0.50781	13.33370
	min_pulse_width	CK ()	0.10727	0.50781	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 ()	0.15686	0.50781	13.33370
	min_pulse_width	CK ()	0.08820	0.50781	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.15686	0.50781	13.33370
	min_pulse_width	CK ()	0.08820	0.50781	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	0.07804	0.09826	0.36525
	SN	-0.00210	-0.17408	-3.30699
	SN	0.06225	0.07639	0.26909
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.06895	0.09113	0.39639
	SN	-0.00210	-0.14800	-2.52285
	SN	0.05186	0.06792	0.29874

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	0.10288	0.11376	0.31019
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.09216	0.10599	0.35231

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	0.07802	0.08891	0.28293
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.07214	0.08598	0.33156

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	0.06690	0.08728	0.35458
	SN	-0.00210	-0.17288	-3.26846
	SN	0.05668	0.07086	0.26487
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.05745	0.07967	0.38416
	SN	-0.00210	-0.14712	-2.49763
	SN	0.04714	0.06324	0.29345

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	0.03495	0.03493	0.03494
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04853	0.07081	0.47770
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.03190	0.05156	0.41896
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.02999	0.02997	0.02999
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04357	0.06585	0.47300
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02695	0.04660	0.41399

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	0.04765	0.04754	0.04740
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.06707	0.08978	0.48771
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.03363	0.05601	0.43025
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.04269	0.04258	0.04245
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.06211	0.08482	0.48275
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02868	0.05106	0.42529

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)	0.02146	0.02136	0.02139
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.04310	0.05821	0.35320
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)	0.01652	0.01642	0.01645
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.03816	0.05327	0.34826

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)	0.04252	0.04247	0.04237
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.03711	0.05543	0.36877
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)	0.03756	0.03751	0.03741
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.03216	0.05047	0.36381

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)	0.03105	0.06164	0.56916
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03908	0.06959	0.57869
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.04842	0.10277	0.98819
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02610	0.05669	0.56417
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03412	0.06463	0.57373
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.04347	0.09782	0.98319

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)	0.08196	0.11686	0.80528
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.04570	0.08080	0.59828
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.08770	0.14796	0.95632
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.05899	0.09316	0.61153
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.04750	0.10909	1.01865
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.07701	0.11190	0.80032
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.04074	0.07584	0.59328
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.08274	0.14299	0.95131
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.05403	0.08821	0.60657
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.04255	0.10413	1.01365

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00566	0.01548	3.73214	3.69636
sky130_osu_sc_18T_ms__dff_l	0.00566	0.01548	2.64740	2.63498

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	3861.62000	4760.80000
sky130_osu_sc_18T_ms__dff_l	0.00000	3291.81000	4191.23000

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)	0.13756	1.03214	16.09280
	QN->Q (FR)	0.01986	0.56823	9.52217
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.14459	1.20026	16.93860
	QN->Q (FR)	0.02348	0.66517	10.27650

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)	0.18439	1.09013	16.62770
	QN->Q (RF)	0.02257	0.66845	11.32700
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.19348	1.25036	17.23230
	QN->Q (RF)	0.02539	0.71731	11.21200

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)	0.15956	0.54877	6.37419
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.16487	0.62262	6.86417

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)	0.11808	0.58700	7.64768
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.11954	0.63976	7.66820

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)	-0.03842	-0.03767	0.01207
	setup	CK (R)	0.09972	0.13334	0.55447
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.04004	-0.03767	0.01115
	setup	CK (R)	0.09767	0.13334	0.60053

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)	-0.06370	-0.16668	0.51524
	setup	CK (R)	0.08210	0.17918	2.34082
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.06310	-0.16668	0.51285
	setup	CK (R)	0.08210	0.17918	2.34031

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 ()	0.06912	0.50781	13.33370
	min_pulse_width	CK ()	0.09583	0.50781	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.06912	0.50781	13.33370
	min_pulse_width	CK ()	0.09583	0.50781	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 ()**	0.13779	0.50781	13.33370
	min_pulse_width	**CK ()**	0.06149	0.50781	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.13779	0.50781	13.33370
	min_pulse_width	**CK ()**	0.06149	0.50781	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	0.07887	0.10290	0.42614
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.07040	0.09383	0.40959

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	0.10218	0.11440	0.31921
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.09205	0.10594	0.34617

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	0.07801	0.09027	0.29557
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.07301	0.08693	0.32713

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	0.06788	0.09199	0.41283
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.05847	0.08193	0.39664

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	0.02754	0.02695	0.03380
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.04716	0.07055	0.49277
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02259	0.02199	0.02884
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.04223	0.06559	0.48818

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	0.04768	0.04748	0.04580
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.06776	0.09098	0.50356
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.04272	0.04252	0.04084
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.06281	0.08603	0.49861

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)	0.03106	0.06167	0.56903
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03863	0.06914	0.57824
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02610	0.05671	0.56404
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03367	0.06418	0.57327

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)	0.04563	0.08074	0.59805
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.08088	0.11624	0.81669
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.08846	0.15027	0.97341
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.05844	0.09264	0.61094
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.04067	0.07578	0.59305
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.07592	0.11128	0.81186
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.08350	0.14528	0.96840
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.05348	0.08754	0.60598

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00544	3.59897
sky130_osu_sc_18T_ms__inv_10	0.05136	31.32179
sky130_osu_sc_18T_ms__inv_2	0.01046	6.91647
sky130_osu_sc_18T_ms__inv_3	0.01560	9.96887
sky130_osu_sc_18T_ms__inv_4	0.02066	13.33993
sky130_osu_sc_18T_ms__inv_6	0.03098	19.73534
sky130_osu_sc_18T_ms__inv_8	0.04118	25.72784
sky130_osu_sc_18T_ms__inv_l	0.00428	2.48357

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	584.28700	1166.75000
sky130_osu_sc_18T_ms__inv_10	0.00000	5829.72000	11642.10000
sky130_osu_sc_18T_ms__inv_2	0.00000	1167.87000	2332.26000
sky130_osu_sc_18T_ms__inv_3	0.00000	1750.66000	3496.02000
sky130_osu_sc_18T_ms__inv_4	0.00000	2334.28000	4661.60000
sky130_osu_sc_18T_ms__inv_6	0.00000	3500.25000	6990.08000
sky130_osu_sc_18T_ms__inv_8	0.00000	4665.92000	9317.94000
sky130_osu_sc_18T_ms__inv_l	0.00000	299.64600	598.17800

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)**	0.01850	0.50389	8.44443
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.03085	0.30400	8.42201
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.01573	0.41657	8.33237
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.01767	0.38323	8.39036
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.01844	0.35459	8.35272
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.02155	0.32625	8.39960
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.02578	0.30991	8.37748
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.02165	0.59010	8.93285

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)**	0.02052	0.58969	9.87204
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.03738	0.36112	9.41821
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.01765	0.49331	9.67298
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.01969	0.45535	9.69349
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.02023	0.42464	9.66493
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.02553	0.39374	9.66730
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.03106	0.37430	9.57158
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.02294	0.62544	9.55338

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	0.00887	0.02394	0.17506
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.08840	0.28290	1.67442
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01620	0.04970	0.34239
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02482	0.07644	0.50582
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.03228	0.10524	0.67024
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.04919	0.16419	0.98776
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.06749	0.22391	1.33238
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00690	0.01598	0.11620

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	0.03062	0.03847	0.11184
sky130_osu_sc_18T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	0.31193	0.42308	1.09829
sky130_osu_sc_18T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	0.05886	0.07751	0.22069
sky130_osu_sc_18T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	0.08972	0.11957	0.32832
sky130_osu_sc_18T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	0.11927	0.16287	0.43754
sky130_osu_sc_18T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	0.17969	0.24813	0.65280
sky130_osu_sc_18T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	0.24387	0.33572	0.87444
sky130_osu_sc_18T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	0.01503	0.02067	0.08003

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.85840	0.85947	0.01105	0.90502

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	1166.64000	1168.40000

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)	-	0.01021	0.14945	1.58198
	A1->Y (RR)	-	0.01066	0.14969	1.58354
	S0->Y (RR)	(!A0 * A1)	0.03676	0.24477	2.14327
	S0->Y (FR)	(A0 * !A1)	0.02782	0.22566	2.27228

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)	-	0.00859	0.15418	1.66085
	A1->Y (FF)	-	0.00866	0.15471	1.66494
	S0->Y (FF)	(!A0 * A1)	0.04037	0.22674	1.85835
	S0->Y (RF)	(A0 * !A1)	0.02600	0.27062	2.83441

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	-	-0.00911	-0.00912	-0.00913
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.02213	0.02213	0.02213
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00959	0.04586	0.56102
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00577	0.03898	0.54341

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	-	0.00921	0.00922	0.00923
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.03409	0.03409	0.03410
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.01796	0.05228	0.55766
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02406	0.05889	0.57308

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)	0.00796	0.00795	0.00796

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)	0.01233	0.01232	0.01232

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)	-0.00249	-0.00248	-0.00249

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)	0.00251	0.00250	0.00250

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)	0.00800	0.04166	0.54630
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00792	0.04171	0.54697

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)	0.01812	0.05336	0.56725
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01578	0.05219	0.56655

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00546	0.00543	2.32431
sky130_osu_sc_18T_ms__nand2_l	0.00429	0.00428	1.66774

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	582.64600	2326.92000
sky130_osu_sc_18T_ms__nand2_l	0.00000	299.02900	1193.85000

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)	0.01885	0.42287	6.31582
	B->Y (FR)	0.02209	0.42208	6.24512
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.02195	0.50906	6.94494
	B->Y (FR)	0.02611	0.51140	6.92384

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)	0.02847	0.64102	9.55618
	B->Y (RF)	0.03199	0.60688	9.04532
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.03186	0.68665	9.39122
	B->Y (RF)	0.03545	0.65606	8.89890

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	0.00943	0.02326	0.17920
	B	0.00000	0.00000	0.00000
	B	0.01206	0.02635	0.19328
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00729	0.01572	0.11986
	B	0.00000	0.00000	0.00000
	B	0.00928	0.01787	0.12802

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	0.06305	0.06938	0.13652
	B	0.00000	0.00000	0.00000
	B	0.06177	0.06717	0.13443
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.03200	0.03661	0.09299
	B	0.00000	0.00000	0.00000
	B	0.03131	0.03530	0.09170

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)	-0.00679	-0.00681	-0.00684
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00505	-0.00509	-0.00511

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)	0.00683	0.00689	0.00686
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00511	0.00515	0.00513

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)	-0.00631	-0.00636	-0.00632
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00471	-0.00475	-0.00472

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)	0.00661	0.00645	0.00638
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00493	0.00482	0.00476

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00548	0.00576	2.15536
sky130_osu_sc_18T_ms__nor2_l	0.00423	0.00455	1.44711

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	456.42300	1158.31000
sky130_osu_sc_18T_ms__nor2_l	0.00000	240.47900	594.46700

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)	0.03491	0.54751	7.95329
	B->Y (FR)	0.02551	0.57631	8.43349
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.04067	0.63277	8.18580
	B->Y (FR)	0.03124	0.66623	8.75377

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)	0.02893	0.49776	7.09873
	B->Y (RF)	0.02220	0.48701	7.06710
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.03107	0.51858	6.70605
	B->Y (RF)	0.02468	0.50903	6.67426

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	0.01360	0.02369	0.16386
	B	0.00000	0.00000	0.00000
	B	0.00965	0.02365	0.19006
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.01016	0.01673	0.12011
	B	0.00000	0.00000	0.00000
	B	0.00743	0.01617	0.13079

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	0.01401	0.02218	0.12402
	B	0.00000	0.00000	0.00000
	B	0.02264	0.03043	0.12147
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00768	0.01365	0.09569
	B	0.00000	0.00000	0.00000
	B	0.01109	0.01688	0.09165

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)	-0.00389	-0.00443	0.00241
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00290	-0.00340	0.00004

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)	0.01634	0.01614	0.01446
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00971	0.00962	0.00881

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)	-0.00210	-0.00210	-0.00107
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00162	-0.00162	-0.00113

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)	0.00839	0.00819	0.00538
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00511	0.00501	0.00353

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00551	0.00564	0.00473	2.09058

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	452.24100	1750.51000

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)	0.03361	0.57684	8.25828
	A1->Y (FR)	0.04611	0.55277	7.80113
	B0->Y (FR)	0.02638	0.55620	7.97715

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)	0.04043	0.61934	8.87817
	A1->Y (RF)	0.05056	0.61318	8.58856
	B0->Y (RF)	0.03151	0.66323	9.60250

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	0.01352	0.02432	0.15724
	A1	0.00000	0.00000	0.00000
	A1	0.01747	0.02570	0.14432
	B0	0.00808	0.01785	0.13443

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	0.04840	0.05265	0.11233
	A1	0.00000	0.00000	0.00000
	A1	0.03442	0.03896	0.10997
	B0	0.01701	0.02267	0.09094

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)	0.00310	0.00311	0.00413
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00619	-0.00622	-0.00620
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00619	-0.00624	-0.00620

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)	0.01359	0.01338	0.01058
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00622	0.00626	0.00625
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00648	0.00631	0.00626

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)	0.00145	0.00088	0.00767
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00616	-0.00618	-0.00615
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00613	-0.00616	-0.00615

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)	0.02141	0.02123	0.01954
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00617	0.00621	0.00620
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00642	0.00626	0.00620

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)	-0.00512	-0.00516	-0.00524

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)	0.00526	0.00529	0.00528

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00542	0.00562	0.00576	0.00566	1.92570

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	683.32100	2309.16000

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)	0.04954	0.53489	7.28402
	A1->Y (FR)	0.03978	0.56353	7.79942
	B0->Y (FR)	0.02814	0.55145	7.79099
	B1->Y (FR)	0.03770	0.52225	7.27036

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)	0.07393	0.64519	8.57153
	A1->Y (RF)	0.05779	0.62109	8.41661
	B0->Y (RF)	0.04938	0.66547	9.15512
	B1->Y (RF)	0.06606	0.69987	9.46790

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	0.02097	0.02928	0.15384
	A1	0.01698	0.02901	0.18382
	B0	0.01041	0.02257	0.17308
	B1	0.01454	0.02366	0.14109

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.04831	0.05240	0.12303
	A1	0.05624	0.06030	0.12177
	B0	0.05791	0.06282	0.12511
	B1	0.05002	0.05498	0.12019

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)	-0.00333	-0.00391	0.00292
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00141	0.00083	0.00765
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00613	-0.00617	-0.00615
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00613	-0.00616	-0.00614

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)	0.01685	0.01671	0.01497
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.02157	0.02143	0.01970
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00621	0.00626	0.00622
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00653	0.00629	0.00623

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)	-0.00156	-0.00156	-0.00054
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00318	0.00318	0.00421
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00612	-0.00615	-0.00613
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00612	-0.00616	-0.00613

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)	0.00888	0.00870	0.00587
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.01362	0.01343	0.01061
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00618	0.00622	0.00621
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00650	0.00627	0.00622

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)	-0.00155	-0.00155	-0.00052
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00319	0.00319	0.00422
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00677	-0.00682	-0.00679
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00661	-0.00667	-0.00677

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)	0.00887	0.00868	0.00586
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.01361	0.01342	0.01060
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00695	0.00705	0.00688
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00680	0.00684	0.00682

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)	-0.00329	-0.00384	0.00299
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00144	0.00090	0.00772
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00688	-0.00690	-0.00687
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00669	-0.00674	-0.00686

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)	0.01677	0.01663	0.01490
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.02149	0.02133	0.01962
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00704	0.00709	0.00697
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00688	0.00692	0.00690

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00587	0.00563	3.77297
sky130_osu_sc_18T_ms__or2_2	0.00587	0.00563	7.40851
sky130_osu_sc_18T_ms__or2_4	0.00588	0.00564	14.12354
sky130_osu_sc_18T_ms__or2_8	0.00592	0.00568	27.33980
sky130_osu_sc_18T_ms__or2_l	0.00467	0.00440	2.66462

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	749.74200	1171.42000
sky130_osu_sc_18T_ms__or2_2	0.00000	1042.72000	2338.28000
sky130_osu_sc_18T_ms__or2_4	0.00000	1628.31000	4670.15000
sky130_osu_sc_18T_ms__or2_8	0.00000	2798.94000	9331.72000
sky130_osu_sc_18T_ms__or2_l	0.00000	390.93900	600.71300

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)	0.05367	0.44319	6.45251
	B->Y (RR)	0.04498	0.41533	6.33775
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.05945	0.40247	6.56053
	B->Y (RR)	0.05053	0.37566	6.42657
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.07743	0.40290	6.66428
	B->Y (RR)	0.06795	0.37836	6.52535
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.11464	0.44774	7.00448
	B->Y (RR)	0.10458	0.42707	6.86383
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.06058	0.50219	6.63046
	B->Y (RR)	0.05159	0.47524	6.47809

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)	0.06985	0.50376	7.66030
	B->Y (FF)	0.05715	0.51127	8.02965
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.08141	0.45009	7.70008
	B->Y (FF)	0.06864	0.45932	8.06866
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.11412	0.44787	7.72367
	B->Y (FF)	0.10138	0.46101	8.08074
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.18294	0.50749	7.82143
	B->Y (FF)	0.17023	0.52753	8.16025
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.07945	0.58794	7.90787
	B->Y (FF)	0.06608	0.59910	8.32695

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	0.02539	0.04472	0.34815
	B	0.00000	0.00000	0.00000
	B	0.03632	0.05946	0.40139
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.03451	0.05484	0.36136
	B	0.00000	0.00000	0.00000
	B	0.04522	0.06846	0.41152
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.05553	0.07729	0.38763
	B	0.00000	0.00000	0.00000
	B	0.06531	0.09021	0.43383
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.11753	0.13433	0.44390
	B	0.00000	0.00000	0.00000
	B	0.12580	0.14475	0.47791
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01619	0.03017	0.25601
	B	0.00000	0.00000	0.00000
	B	0.02120	0.03739	0.28156

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	0.05360	0.07368	0.39933
	B	0.00000	0.00000	0.00000
	B	0.04958	0.07725	0.48617
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.09479	0.11074	0.42411
	B	0.00000	0.00000	0.00000
	B	0.09095	0.11409	0.50975
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.18859	0.18831	0.47041
	B	0.00000	0.00000	0.00000
	B	0.18526	0.19139	0.55550
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.40710	0.35360	0.56637
	B	0.00000	0.00000	0.00000
	B	0.40470	0.35849	0.65039
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.03350	0.04726	0.27536
	B	0.00000	0.00000	0.00000
	B	0.03054	0.04873	0.32936

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)	-0.00380	-0.00439	0.00242
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00378	-0.00437	0.00243
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00375	-0.00434	0.00247
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00367	-0.00427	0.00254
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00285	-0.00338	0.00005

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)	0.01639	0.01621	0.01449
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.01640	0.01622	0.01450
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.01643	0.01625	0.01453
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.01648	0.01630	0.01458
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00974	0.00966	0.00883

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)	-0.00208	-0.00208	-0.00111
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00207	-0.00207	-0.00110
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00204	-0.00203	-0.00107
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00197	-0.00197	-0.00100
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00165	-0.00165	-0.00119

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)	0.00848	0.00827	0.00546
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00849	0.00828	0.00548
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00852	0.00831	0.00551
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00858	0.00837	0.00556
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00520	0.00509	0.00362

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00576	0.00733	2.15269
sky130_osu_sc_18T_ms__tbufi_l	0.00456	0.00583	1.45521

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	583.37700	2320.77000
sky130_osu_sc_18T_ms__tbufi_l	0.00000	299.54700	1191.18000

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)	0.02493	0.56905	8.33211
	OE->Y (FR)	0.03578	0.39183	5.34323
	OE->Y (RR)	0.05365	0.50473	6.67698
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.03057	0.66185	8.71288
	OE->Y (FR)	0.03958	0.39165	5.34305
	OE->Y (RR)	0.06122	0.56765	6.53231

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)	0.02848	0.62093	9.04501
	OE->Y (FF)	0.03606	0.39182	5.34325
	OE->Y (RF)	0.02597	0.56755	8.34573
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.03204	0.64842	8.53235
	OE->Y (FF)	0.04003	0.39163	5.34304
	OE->Y (RF)	0.02973	0.59945	7.82150

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	0.04095	0.05215	0.18167
	OE	0.00000	0.00000	0.00000
	OE	0.03897	0.06872	0.51189
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.02358	0.03057	0.12174
	OE	0.00000	0.00000	0.00000
	OE	0.02233	0.04324	0.35546

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	0.05995	0.06597	0.13497
	OE	0.00000	0.00000	0.00000
	OE	0.06614	0.09841	0.58674
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.02931	0.03395	0.09189
	OE	0.00000	0.00000	0.00000
	OE	0.03395	0.05585	0.38810

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)	-0.00501	-0.00505	-0.00485
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00362	-0.00366	-0.00340
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00384	-0.00387	-0.00373
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00283	-0.00285	-0.00263

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)	0.00515	0.00521	0.00485
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00551	0.00553	0.00499
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00391	0.00394	0.00373
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00423	0.00424	0.00386

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)	0.02448	0.05838	0.56654
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01395	0.04839	0.56116
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01338	0.03639	0.38113
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00788	0.03109	0.37816

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)	0.01144	0.04811	0.57363
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01026	0.04678	0.56845
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00904	0.03312	0.38662
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00821	0.03227	0.38374

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00575	0.00904	2.15221
sky130_osu_sc_18T_ms__tnbufi_l	0.00455	0.00693	1.45467

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	972.25200	1168.23000
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	498.78900	599.16400

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)	0.02490	0.56875	8.32797
	OE->Y (RR)	0.02726	0.39344	5.34471
	OE->Y (FR)	0.03305	0.52198	7.59411
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.03062	0.66146	8.70902
	OE->Y (RR)	0.02907	0.39387	5.34526
	OE->Y (FR)	0.03900	0.60993	7.83163

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)	0.02814	0.62079	9.04427
	OE->Y (RF)	0.02697	0.39344	5.34479
	OE->Y (FF)	0.04063	0.45446	6.26034
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.03164	0.64821	8.53091
	OE->Y (RF)	0.02882	0.39389	5.34528
	OE->Y (FF)	0.04677	0.52167	6.14338

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	0.00935	0.02081	0.15566
	OE	0.00000	0.00000	0.00000
	OE	0.02370	0.06089	0.57392
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00729	0.01440	0.10766
	OE	0.00000	0.00000	0.00000
	OE	0.01791	0.04260	0.39016

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	0.02887	0.03496	0.10465
	OE	0.00000	0.00000	0.00000
	OE	0.04812	0.08297	0.55070
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.01382	0.01850	0.07687
	OE	0.00000	0.00000	0.00000
	OE	0.02899	0.05162	0.36179

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)	0.00578	0.00575	0.00597
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00718	0.00716	0.00740
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00198	0.00196	0.00214
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00300	0.00298	0.00319

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)	0.01464	0.01467	0.01433
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.01504	0.01505	0.01450
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00849	0.00850	0.00830
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00883	0.00882	0.00844

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)	0.00374	0.03909	0.55746
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00230	0.03781	0.55104
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00059	0.02431	0.37434
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00042	0.02356	0.37093

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)	0.02819	0.06617	0.58566
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01769	0.05641	0.57865
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01884	0.04395	0.39475
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01339	0.03899	0.39112

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.01139	0.01049	2.20284

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	2048.60000	3476.11000

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	0.06700	0.53296	6.86127
	A->Y (FR)	!B	0.03115	0.57021	8.32250
	B->Y (RR)	A	0.05407	0.53045	7.10396
	B->Y (FR)	!A	0.04528	0.55280	7.91906

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	0.07481	0.52689	6.82136
	A->Y (RF)	!B	0.03977	0.62232	9.04557
	B->Y (FF)	A	0.06253	0.51876	6.87072
	B->Y (RF)	!A	0.05144	0.63323	9.00643

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	0.06923	0.09770	0.54188
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02233	0.06678	0.68621
	B	A	0.00000	0.00000	0.00000
	B	A	0.06203	0.09597	0.61021
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02548	0.06646	0.65235

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	0.08808	0.12080	0.61442
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.09996	0.13487	0.66784
	B	A	0.00000	0.00000	0.00000
	B	A	0.11349	0.14781	0.64532
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.07205	0.10762	0.64515

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.01143	0.01054	2.24762

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	2049.17000	3536.88000

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	0.06260	0.53380	7.16723
	A->Y (FR)	B	0.04072	0.56354	8.22834
	B->Y (RR)	!A	0.05539	0.53310	7.21006
	B->Y (FR)	A	0.04399	0.56371	8.16650

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	0.06149	0.50715	6.59986
	A->Y (RF)	B	0.04168	0.64406	9.27079
	B->Y (FF)	!A	0.05847	0.51272	6.84224
	B->Y (RF)	A	0.04840	0.61633	8.83099

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	0.05925	0.10274	0.71956
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.03475	0.06685	0.57978
	B	A	0.00000	0.00000	0.00000
	B	A	0.06019	0.10325	0.70717
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.03279	0.06720	0.59313

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	0.10115	0.13898	0.70828
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.08605	0.11867	0.57615
	B	A	0.00000	0.00000	0.00000
	B	A	0.09906	0.13539	0.68826
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.08387	0.11923	0.62452

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_ms__ant	6.59340
sky130_osu_sc_18T_ms__tiehi	6.59340
sky130_osu_sc_18T_ms__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_ms__ant	1.76927
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	675982.00000	1351960.00000
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
	0.00089	0.25410	3.39826

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_ms__ant	0.00000	0.00000	0.00000
	11.76060	11.20120	3.90788