sky130_osu_sc_18T_ms_ff_1P95_-40C.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_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.01979	0.01972	0.01501	4.17966	1.97203	3.98350
sky130_osu_sc_18T_ms__addf_l	0.01977	0.01971	0.01497	2.90777	1.97677	2.91385

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addf_1	0.00000	0.46331	0.65119
sky130_osu_sc_18T_ms__addf_l	0.00000	0.30395	0.49183

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)	0.09192	1.36430	25.43810
	B->CO (RR)	0.07908	1.29094	24.02610
	CI->CO (RR)	0.08722	1.39029	25.85860
	CON->CO (FR)	0.01835	0.59669	10.42680
sky130_osu_sc_18T_ms__addf_1	A->CO (RR)	0.09249	1.27286	20.73400
	B->CO (RR)	0.07983	1.21060	19.76200
	CI->CO (RR)	0.08776	1.29983	21.19550
	CON->CO (FR)	0.02054	0.64711	10.46320

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)	0.11368	1.64152	30.40170
	B->CO (FF)	0.09986	1.55896	28.78990
	CI->CO (FF)	0.09799	1.63321	30.46750
	CON->CO (RF)	0.01747	0.54787	9.85046
sky130_osu_sc_18T_ms__addf_1	A->CO (FF)	0.11219	1.48755	24.05400
	B->CO (FF)	0.09867	1.41953	22.92850
	CI->CO (FF)	0.09644	1.48094	24.16500
	CON->CO (RF)	0.01856	0.56410	9.21998

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)	0.08788	0.73610	9.95609
	B->CON (FR)	0.07326	0.69003	9.49027
	CI->CON (FR)	0.07218	0.73208	10.12740
sky130_osu_sc_18T_ms__addf_l	A->CON (FR)	0.08380	0.73273	9.96783
	B->CON (FR)	0.06958	0.68706	9.49982
	CI->CON (FR)	0.06807	0.72882	10.13900

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)	0.06174	0.53359	7.21188
	B->CON (RF)	0.04946	0.50922	7.01081
	CI->CON (RF)	0.05708	0.56444	7.74632
sky130_osu_sc_18T_ms__addf_l	A->CON (RF)	0.05958	0.53180	7.22000
	B->CON (RF)	0.04757	0.50751	7.01993
	CI->CON (RF)	0.05491	0.56248	7.75595

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)	0.16709	1.40903	23.23470
	B->S (-R)	0.17175	1.37865	22.02570
	CI->S (-R)	0.15023	1.39929	23.31620
	CON->S (RR)	0.05356	0.44908	6.77407
sky130_osu_sc_18T_ms__addf_l	A->S (-R)	0.16091	1.33172	19.81940
	B->S (-R)	0.16600	1.31332	18.98940
	CI->S (-R)	0.14399	1.32332	19.93400
	CON->S (RR)	0.05345	0.49308	6.90915

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)	0.14601	1.25470	20.35180
	B->S (-F)	0.14384	1.20403	19.41340
	CI->S (-F)	0.14063	1.27850	20.77730
	CON->S (FF)	0.06085	0.55182	7.94271
sky130_osu_sc_18T_ms__addf_l	A->S (-F)	0.13991	1.16728	17.01660
	B->S (-F)	0.13795	1.12673	16.40880
	CI->S (-F)	0.13450	1.19203	17.48110
	CON->S (FF)	0.05934	0.57074	7.69207

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	0.00474	0.00817	0.09125
	B	0.00550	0.00847	0.07947
	CI	0.00747	0.01117	0.09459
sky130_osu_sc_18T_ms__addf_l	A	0.00364	0.00618	0.06012
	B	0.00444	0.00645	0.05314
	CI	0.00637	0.00930	0.06365

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01922	0.02270	0.12962
	B	0.02011	0.02262	0.11620
	CI	0.01615	0.02020	0.13086
sky130_osu_sc_18T_ms__addf_l	A	0.01811	0.02089	0.09630
	B	0.01904	0.02100	0.08676
	CI	0.01507	0.01843	0.09937

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01917	0.02109	0.07371
	B	0.01955	0.02153	0.07064
	CI	0.01766	0.02012	0.07207
sky130_osu_sc_18T_ms__addf_l	A	0.01808	0.02012	0.07339
	B	0.01850	0.02052	0.07014
	CI	0.01506	0.01779	0.07730

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.00472	0.00686	0.04856
	B	0.00548	0.00731	0.04440
	CI	0.00637	0.00837	0.04760
sky130_osu_sc_18T_ms__addf_l	A	0.00362	0.00555	0.04384
	B	0.00442	0.00599	0.04039
	CI	0.00634	0.00851	0.04858

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.01921	0.02255	0.12397
	B	-0.00726	-0.00543	0.06971
	CI	0.01614	0.02007	0.12594
sky130_osu_sc_18T_ms__addf_l	A	0.01811	0.02089	0.09633
	B	-0.00909	-0.00701	0.08112
	CI	0.00464	0.00538	0.08519

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__addf_1	A	0.04311	0.04515	0.11402
	B	0.03785	0.04245	0.15954
	CI	0.03199	0.03445	0.10080
sky130_osu_sc_18T_ms__addf_l	A	0.04165	0.04359	0.11568
	B	0.03645	0.04135	0.16164
	CI	0.03054	0.03278	0.10262

SKY130_OSU_SC_18T_MS__ADDHx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00964	0.01065	4.04772	2.14578	4.15303
sky130_osu_sc_18T_ms__addh_l	0.00964	0.01065	2.36501	2.15527	2.38593

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__addh_1	0.00000	0.55696	0.65108
sky130_osu_sc_18T_ms__addh_l	0.00000	0.52437	0.62500

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)	0.06024	0.44182	6.39787
	B->CO (RR)	0.06323	0.44540	6.60094
sky130_osu_sc_18T_ms__addh_l	A->CO (RR)	0.06114	0.50875	6.48197
	B->CO (RR)	0.06414	0.51236	6.58638

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)	0.05220	0.52009	7.87245
	B->CO (FF)	0.05685	0.53175	7.86839
sky130_osu_sc_18T_ms__addh_l	A->CO (FF)	0.05230	0.54152	7.08335
	B->CO (FF)	0.05676	0.55273	7.08487

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	0.08290	0.35758	3.33458
	A->CON (FR)	!B	0.04608	0.68123	9.92743
	B->CON (RR)	A	0.08584	0.36087	3.54034
	B->CON (FR)	!A	0.05869	0.69677	9.96924
sky130_osu_sc_18T_ms__addh_l	A->CON (RR)	B	0.07505	0.34294	3.40487
	A->CON (FR)	!B	0.04135	0.67725	9.94939
	B->CON (RR)	A	0.07800	0.34641	3.52375
	B->CON (FR)	!A	0.05396	0.69259	9.99217

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	0.08241	0.52763	6.14743
	A->CON (RF)	!B	0.03609	0.53910	7.84823
	B->CON (FF)	A	0.08170	0.56369	6.61869
	B->CON (RF)	!A	0.04162	0.51097	7.29003
sky130_osu_sc_18T_ms__addh_l	A->CON (FF)	B	0.07517	0.50530	6.00231
	A->CON (RF)	!B	0.03350	0.53672	7.86729
	B->CON (FF)	A	0.07446	0.54123	6.46397
	B->CON (RF)	!A	0.03910	0.50879	7.30906

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	0.06426	1.31965	24.89850
	A->S (FR)	B	0.11078	1.29077	22.89620
	B->S (RR)	!A	0.06977	1.24817	23.30870
	B->S (FR)	A	0.11057	1.37121	24.40180
	CON->S (FR)	-	0.02107	0.62091	10.81800
sky130_osu_sc_18T_ms__addh_l	A->S (RR)	!B	0.06446	1.19167	18.49410
	A->S (FR)	B	0.10642	1.14829	16.43540
	B->S (RR)	!A	0.07013	1.13674	17.46760
	B->S (FR)	A	0.10619	1.21239	17.36950
	CON->S (FR)	-	0.02383	0.69320	10.68490

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	0.06888	1.46913	27.69100
	A->S (RF)	B	0.10409	0.97484	16.76120
	B->S (FF)	!A	0.08148	1.49071	27.83880
	B->S (RF)	A	0.10701	0.97776	16.96060
	CON->S (RF)	-	0.01624	0.52703	9.44800
sky130_osu_sc_18T_ms__addh_l	A->S (FF)	!B	0.06656	1.27253	19.74300
	A->S (RF)	B	0.09806	0.85155	11.66600
	B->S (FF)	!A	0.07917	1.29083	19.81370
	B->S (RF)	A	0.10102	0.85469	11.77220
	CON->S (RF)	-	0.01802	0.55097	8.57390

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	0.00887	0.00968	0.04126
	B	0.00000	0.00000	0.00000
	B	0.00796	0.00868	0.05594
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00731	0.00830	0.05087
	B	0.00000	0.00000	0.00000
	B	0.00641	0.00729	0.05946

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	0.01364	0.01628	0.08173
	B	0.00000	0.00000	0.00000
	B	0.01425	0.01810	0.08981
sky130_osu_sc_18T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01209	0.01447	0.07227
	B	0.00000	0.00000	0.00000
	B	0.01270	0.01593	0.07616

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	0.00886	0.00972	0.04390
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01210	0.01367	0.03450
	B	A	0.00000	0.00000	0.00000
	B	A	0.00795	0.00870	0.05898
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01354	0.01398	0.02602
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00731	0.00832	0.05056
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01102	0.01250	0.03135
	B	A	0.00000	0.00000	0.00000
	B	A	0.00640	0.00726	0.05964
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01247	0.01277	0.02272

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	0.01363	0.01614	0.07657
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00170	0.00285	0.02094
	B	A	0.00000	0.00000	0.00000
	B	A	0.01425	0.01777	0.08172
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00310	0.00398	0.02060
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01209	0.01428	0.07176
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00040	0.00105	0.01075
	B	A	0.00000	0.00000	0.00000
	B	A	0.01270	0.01595	0.07566
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00181	0.00197	0.01101

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	0.01364	0.01632	0.08356
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00172	0.00311	0.02836
	B	A	0.00000	0.00000	0.00000
	B	A	0.01426	0.01814	0.09170
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00313	0.00450	0.02528
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01211	0.01454	0.07270
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00042	0.00120	0.01192
	B	A	0.00000	0.00000	0.00000
	B	A	0.01271	0.01594	0.07577
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00183	0.00233	0.01244

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	0.00887	0.00971	0.04206
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01211	0.01347	0.03178
	B	A	0.00000	0.00000	0.00000
	B	A	0.00796	0.00867	0.05669
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01357	0.01410	0.02673
sky130_osu_sc_18T_ms__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00732	0.00833	0.05118
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01103	0.01242	0.03075
	B	A	0.00000	0.00000	0.00000
	B	A	0.00642	0.00728	0.05957
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01248	0.01287	0.02277

SKY130_OSU_SC_18T_MS__AND2x

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00523	0.00533	4.08427
sky130_osu_sc_18T_ms__and2_2	0.00523	0.00533	7.70217
sky130_osu_sc_18T_ms__and2_4	0.00524	0.00534	14.45121
sky130_osu_sc_18T_ms__and2_6	0.00528	0.00535	21.32902
sky130_osu_sc_18T_ms__and2_8	0.00527	0.00538	27.17872
sky130_osu_sc_18T_ms__and2_l	0.00416	0.00426	2.88890

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__and2_1	0.00000	0.27125	0.43394
sky130_osu_sc_18T_ms__and2_2	0.00000	0.43396	0.43406
sky130_osu_sc_18T_ms__and2_4	0.00000	0.75938	0.86779
sky130_osu_sc_18T_ms__and2_6	0.00000	1.08480	1.30160
sky130_osu_sc_18T_ms__and2_8	0.00000	1.41022	1.73541
sky130_osu_sc_18T_ms__and2_l	0.00000	0.07207	0.11525

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)	0.04608	0.39773	6.48755
	B->Y (RR)	0.04966	0.39698	6.17987
sky130_osu_sc_18T_ms__and2_2	A->Y (RR)	0.05347	0.35658	6.40703
	B->Y (RR)	0.05706	0.35545	6.09943
sky130_osu_sc_18T_ms__and2_4	A->Y (RR)	0.07371	0.36504	6.49750
	B->Y (RR)	0.07731	0.36323	6.21520
sky130_osu_sc_18T_ms__and2_6	A->Y (RR)	0.09391	0.39415	6.68091
	B->Y (RR)	0.09742	0.39007	6.41819
sky130_osu_sc_18T_ms__and2_8	A->Y (RR)	0.11444	0.42679	6.78819
	B->Y (RR)	0.11804	0.42053	6.53331
sky130_osu_sc_18T_ms__and2_l	A->Y (RR)	0.05086	0.46229	6.64561
	B->Y (RR)	0.05462	0.46133	6.39417

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)	0.04167	0.46421	7.22467
	B->Y (FF)	0.04407	0.47241	7.23449
sky130_osu_sc_18T_ms__and2_2	A->Y (FF)	0.04598	0.41657	7.01706
	B->Y (FF)	0.04898	0.42518	7.04716
sky130_osu_sc_18T_ms__and2_4	A->Y (FF)	0.06145	0.41880	7.01467
	B->Y (FF)	0.06446	0.42621	7.06333
sky130_osu_sc_18T_ms__and2_6	A->Y (FF)	0.07967	0.44347	7.12981
	B->Y (FF)	0.08252	0.45004	7.17477
sky130_osu_sc_18T_ms__and2_8	A->Y (FF)	0.09633	0.46563	7.00259
	B->Y (FF)	0.09928	0.47179	7.05102
sky130_osu_sc_18T_ms__and2_l	A->Y (FF)	0.04496	0.50293	6.97953
	B->Y (FF)	0.04809	0.51407	7.03388

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	0.00609	0.01185	0.17872
	B	0.00000	0.00000	0.00000
	B	0.00616	0.00878	0.11070
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01277	0.01756	0.18642
	B	0.00000	0.00000	0.00000
	B	0.01288	0.01518	0.11623
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02775	0.03194	0.19513
	B	0.00000	0.00000	0.00000
	B	0.02784	0.03040	0.12545
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.04556	0.04772	0.20228
	B	0.00000	0.00000	0.00000
	B	0.04557	0.04619	0.13309
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.06468	0.06418	0.28963
	B	0.00000	0.00000	0.00000
	B	0.06481	0.06246	0.14007
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00453	0.00937	0.13339
	B	0.00000	0.00000	0.00000
	B	0.00462	0.00729	0.09083

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	0.01640	0.02590	0.16674
	B	0.00000	0.00000	0.00000
	B	0.01854	0.02720	0.15934
sky130_osu_sc_18T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.02144	0.03078	0.17271
	B	0.00000	0.00000	0.00000
	B	0.02360	0.03215	0.16536
sky130_osu_sc_18T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.03576	0.04341	0.18457
	B	0.00000	0.00000	0.00000
	B	0.03771	0.04437	0.17681
sky130_osu_sc_18T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.04998	0.05679	0.19703
	B	0.00000	0.00000	0.00000
	B	0.05186	0.05701	0.18821
sky130_osu_sc_18T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.06893	0.07010	0.21079
	B	0.00000	0.00000	0.00000
	B	0.07057	0.06953	0.19990
sky130_osu_sc_18T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01303	0.01972	0.11824
	B	0.00000	0.00000	0.00000
	B	0.01467	0.02079	0.11384

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)	-0.00622	-0.00625	-0.00626
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00622	-0.00625	-0.00626
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00622	-0.00625	-0.00625
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00624	-0.00628	-0.00628
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00621	-0.00625	-0.00625
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00475	-0.00476	-0.00477

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)	0.00625	0.00625	0.00628
sky130_osu_sc_18T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00625	0.00625	0.00628
sky130_osu_sc_18T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00625	0.00625	0.00629
sky130_osu_sc_18T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00629	0.00629	0.00632
sky130_osu_sc_18T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00626	0.00626	0.00629
sky130_osu_sc_18T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00476	0.00480	0.00478

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)	-0.00584	-0.00586	-0.00585
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00584	-0.00586	-0.00585
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00583	-0.00586	-0.00585
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00583	-0.00585	-0.00584
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00582	-0.00587	-0.00584
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00446	-0.00449	-0.00447

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)	0.00587	0.00591	0.00587
sky130_osu_sc_18T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00587	0.00592	0.00587
sky130_osu_sc_18T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00587	0.00592	0.00588
sky130_osu_sc_18T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00588	0.00592	0.00588
sky130_osu_sc_18T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00588	0.00593	0.00589
sky130_osu_sc_18T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00447	0.00451	0.00448

SKY130_OSU_SC_18T_MS__AOI21

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00496	0.00516	0.00498	1.92820

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi21_l	0.00000	0.09560	0.21690

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)	0.04832	0.69286	9.81033
	A1->Y (FR)	0.04096	0.65569	9.36160
	B0->Y (FR)	0.03493	0.68936	9.97417

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)	0.03341	0.47530	6.66008
	A1->Y (RF)	0.02971	0.48006	6.79447
	B0->Y (RF)	0.02162	0.48762	7.06642

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	0.01488	0.01535	0.03185
	A1	0.00000	0.00000	0.00000
	A1	0.01235	0.01264	0.02978
	B0	0.00872	0.01158	0.04914

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	0.00296	0.00284	0.01082
	A1	0.00000	0.00000	0.00000
	A1	0.00303	0.00322	0.01380
	B0	-0.00166	-0.00099	0.00907

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)	-0.00478	-0.00548	-0.00545
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00549	-0.00554	-0.00550
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00549	-0.00553	-0.00551

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)	0.00541	0.00548	0.00545
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00549	0.00558	0.00552
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00552	0.00557	0.00552

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)	-0.00477	-0.00535	-0.00538
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00543	-0.00547	-0.00543
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00592	-0.00597	-0.00596

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)	0.00535	0.00541	0.00538
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00543	0.00550	0.00545
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00594	0.00600	0.00598

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)	-0.00250	-0.00251	-0.00251

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)	0.00268	0.00269	0.00256

SKY130_OSU_SC_18T_MS__AOI22

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00497	0.00516	0.00532	0.00508	1.81856

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__aoi22_1	0.00000	0.10388	0.43381

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)	0.06140	0.70658	9.68131
	A1->Y (FR)	0.05422	0.68482	9.45541
	B0->Y (FR)	0.03648	0.67824	9.64287
	B1->Y (FR)	0.04369	0.70687	9.96934

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)	0.04326	0.47668	6.41347
	A1->Y (RF)	0.03960	0.48185	6.54532
	B0->Y (RF)	0.02161	0.45792	6.53453
	B1->Y (RF)	0.02598	0.45577	6.40349

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	0.01821	0.01854	0.03685
	A1	0.01571	0.01604	0.03329
	B0	0.00947	0.01298	0.05646
	B1	0.01197	0.01526	0.05687

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__aoi22_l	A0	0.00627	0.00608	0.01460
	A1	0.00635	0.00644	0.01792
	B0	-0.00117	-0.00049	0.01089
	B1	-0.00105	-0.00077	0.00770

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)	-0.00483	-0.00543	-0.00545
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00549	-0.00551	-0.00550
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00549	-0.00554	-0.00551
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00549	-0.00553	-0.00551

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)	0.00542	0.00548	0.00546
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00549	0.00558	0.00553
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00552	0.00557	0.00552
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00552	0.00557	0.00552

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)	-0.00478	-0.00534	-0.00538
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00543	-0.00546	-0.00543
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00592	-0.00597	-0.00596
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00592	-0.00597	-0.00596

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)	0.00535	0.00539	0.00538
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00543	0.00550	0.00546
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00594	0.00597	0.00598
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00594	0.00597	0.00598

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)	-0.00251	-0.00252	-0.00252
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00250	-0.00253	-0.00252
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00609	-0.00613	-0.00612
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00608	-0.00608	-0.00612

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)	0.00276	0.00277	0.00258
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00251	0.00253	0.00252
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00610	0.00615	0.00614
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00611	0.00615	0.00614

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)	-0.00253	-0.00259	-0.00254
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00252	-0.00255	-0.00253
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00558	-0.00561	-0.00560
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00558	-0.00563	-0.00560

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)	0.00278	0.00279	0.00260
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00253	0.00255	0.00253
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00561	0.00565	0.00561
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00561	0.00565	0.00561

SKY130_OSU_SC_18T_MS__BUFx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00534	4.09553
sky130_osu_sc_18T_ms__buf_2	0.00534	7.80965
sky130_osu_sc_18T_ms__buf_4	0.00534	14.81242
sky130_osu_sc_18T_ms__buf_6	0.00096	1.80000
sky130_osu_sc_18T_ms__buf_8	0.00537	27.90144
sky130_osu_sc_18T_ms__buf_l	0.00430	2.91584

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__buf_1	0.00000	0.21703	0.21703
sky130_osu_sc_18T_ms__buf_2	0.00000	0.32555	0.43394
sky130_osu_sc_18T_ms__buf_4	0.00000	0.54258	0.86775
sky130_osu_sc_18T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_ms__buf_8	0.00000	0.97664	1.73537
sky130_osu_sc_18T_ms__buf_l	0.00000	0.05767	0.05767

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)**	0.03838	0.37560	6.16218
sky130_osu_sc_18T_ms__buf_2	**A->Y (RR)**	0.04337	0.32903	6.07604
sky130_osu_sc_18T_ms__buf_4	**A->Y (RR)**	0.05882	0.33096	6.19065
sky130_osu_sc_18T_ms__buf_8	**A->Y (RR)**	0.08909	0.37813	6.40420
sky130_osu_sc_18T_ms__buf_l	**A->Y (RR)**	0.04266	0.43793	6.35297

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)**	0.03953	0.45982	7.28031
sky130_osu_sc_18T_ms__buf_2	**A->Y (FF)**	0.04447	0.41642	7.17706
sky130_osu_sc_18T_ms__buf_4	**A->Y (FF)**	0.05991	0.41897	7.21926
sky130_osu_sc_18T_ms__buf_8	**A->Y (FF)**	0.09456	0.46621	7.21223
sky130_osu_sc_18T_ms__buf_l	**A->Y (FF)**	0.04337	0.50177	7.10275

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	0.00564	0.01025	0.12207
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01221	0.01655	0.12993
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02664	0.03134	0.14513
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.05988	0.06338	0.16856
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00433	0.00859	0.10449

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	0.01559	0.02498	0.16402
sky130_osu_sc_18T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.02060	0.02981	0.16901
sky130_osu_sc_18T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.03471	0.04219	0.18156
sky130_osu_sc_18T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.06796	0.06822	0.20368
sky130_osu_sc_18T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01253	0.01925	0.11799

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
	-0.00090	-0.00090	-0.00089

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
	0.00090	0.00090	0.00089

SKY130_OSU_SC_18T_MS__DFFRx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00512	0.00506	0.01457	3.89732	3.88695
sky130_osu_sc_18T_ms__dffr_l	0.00512	0.00506	0.01454	2.91594	2.91684

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffr_1	0.00000	0.60324	0.99129
sky130_osu_sc_18T_ms__dffr_l	0.00000	0.44388	0.83193

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)	0.16281	1.00019	15.68000
	QN->Q (FR)	0.02225	0.69108	11.96430
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RR)	0.16117	1.09191	15.65290
	QN->Q (FR)	0.02316	0.71939	11.68320

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)	0.17771	1.01216	15.82890
	QN->Q (RF)	0.02063	0.65813	11.50910
	RN->Q (FF)	0.13459	1.07479	17.25150
sky130_osu_sc_18T_ms__dffr_l	CK->Q (RF)	0.17943	1.11150	15.86210
	QN->Q (RF)	0.02077	0.66037	10.77790
	RN->Q (FF)	0.13651	1.17295	17.27460

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)	0.15653	0.51092	6.05894
	RN->QN (FR)	0.11345	0.57292	7.47945
sky130_osu_sc_18T_ms__dffr_l	CK->QN (RR)	0.15654	0.56055	6.28703
	RN->QN (FR)	0.11360	0.62226	7.70212

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)**	0.13750	0.49675	5.91692
sky130_osu_sc_18T_ms__dffr_l	**CK->QN (RF)**	0.13361	0.52016	5.77405

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)	-0.03693	-0.04707	0.04693
	setup	CK (R)	0.12967	0.17012	0.27597
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.03696	-0.04707	0.04664
	setup	CK (R)	0.12959	0.17056	0.26956

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)	-0.06787	-0.24542	-2.65047
	setup	CK (R)	0.08764	0.25498	3.44381
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06824	-0.24527	-2.66673
	setup	CK (R)	0.08764	0.25498	3.44393

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)	-0.03693	-0.04707	0.04693
	setup	CK (R)	0.12967	0.17012	0.27597
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.03696	-0.04707	0.04664
	setup	CK (R)	0.12959	0.17056	0.26956

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)	-0.06787	-0.24542	-2.65047
	setup	CK (R)	0.08764	0.25498	3.44381
sky130_osu_sc_18T_ms__dffr_l	hold	CK (R)	-0.06824	-0.24527	-2.66673
	setup	CK (R)	0.08764	0.25498	3.44393

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)	0.10908	0.14932	0.72683
	removal	CK (R)	-0.01654	-0.02354	-0.08826
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.10691	0.14763	0.72092
	removal	CK (R)	-0.01654	-0.02354	-0.08826

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)	0.10908	0.14932	0.72683
	removal	CK (R)	-0.01654	-0.02354	-0.08826
sky130_osu_sc_18T_ms__dffr_l	recovery	CK (R)	0.10691	0.14763	0.72092
	removal	CK (R)	-0.01654	-0.02354	-0.08826

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 ()	0.07740	0.47119	13.33370
	min_pulse_width	RN ()	0.08095	0.47119	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	RN ()	0.07740	0.47119	13.33370
	min_pulse_width	RN ()	0.07740	0.47119	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 ()	0.07385	0.47119	13.33370
	min_pulse_width	CK ()	0.09159	0.47119	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.07030	0.47119	13.33370
	min_pulse_width	CK ()	0.08804	0.47119	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 ()	0.16964	0.47119	13.33370
	min_pulse_width	CK ()	0.07385	0.47119	13.33370
sky130_osu_sc_18T_ms__dffr_l	min_pulse_width	CK ()	0.16964	0.47119	13.33370
	min_pulse_width	CK ()	0.07385	0.47119	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	0.01604	0.01309	-0.00450
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01438	0.01421	0.03688

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	0.01832	0.01516	0.00450
	RN	-0.00206	-0.18477	-3.70484
	RN	0.04278	0.04160	0.03623
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01665	0.01549	0.05075
	RN	-0.00206	-0.15525	-2.77196
	RN	0.04108	0.04197	0.08464

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	0.01831	0.01518	0.00589
	RN	-0.00206	-0.18447	-3.69345
	RN	0.04275	0.04159	0.03639
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01664	0.01547	0.05221
	RN	-0.00206	-0.15528	-2.77242
	RN	0.04106	0.04195	0.08238

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	0.01598	0.01319	-0.00589
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01433	0.01427	0.04007

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	-0.00463	-0.00536	-0.00541
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02058	0.02190	0.11484
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00893	0.01050	0.10205
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00463	-0.00537	-0.00541
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02058	0.02190	0.11484
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00893	0.01050	0.10204

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	0.00538	0.00541	0.00543
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03308	0.03574	0.13192
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01564	0.01833	0.11113
sky130_osu_sc_18T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00538	0.00541	0.00542
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03308	0.03574	0.13192
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01564	0.01833	0.11113

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)	0.00614	0.01226	0.20014
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01798	0.02375	0.22117
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)	0.00614	0.01226	0.20013
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01798	0.02375	0.22117

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)	0.01509	0.02524	0.21317
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03202	0.04212	0.23912
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)	0.01509	0.02523	0.21317
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03202	0.04212	0.23912

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)	-0.00141	0.00424	0.19071
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00983	0.01415	0.21441
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00208	0.00370	0.18925
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00141	0.00423	0.19071
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00983	0.01415	0.21441
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00208	0.00370	0.18925

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)	0.02280	0.03302	0.22002
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.05084	0.05941	0.29465
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03864	0.04684	0.24566
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04909	0.06701	0.36925
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02594	0.03599	0.22154
sky130_osu_sc_18T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02280	0.03303	0.22002
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.05084	0.05941	0.29465
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03864	0.04684	0.24566
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04909	0.06717	0.36925
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02594	0.03616	0.22154

SKY130_OSU_SC_18T_MS__DFFSRx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00508	0.00507	0.01095	0.01501	4.18799	4.18066
sky130_osu_sc_18T_ms__dffsr_l	0.00508	0.00507	0.01094	0.01501	2.91742	2.92173

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffsr_1	0.00000	0.70677	0.99145
sky130_osu_sc_18T_ms__dffsr_l	0.00000	0.54741	0.83209

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)	0.17341	1.00595	15.99450
	QN->Q (FR)	0.02093	0.67126	11.82600
	RN->Q (RR)	0.14108	0.98458	16.08430
	SN->Q (FR)	0.12719	1.09026	17.68410
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RR)	0.17660	1.11135	15.69840
	QN->Q (FR)	0.02309	0.71657	11.63930
	RN->Q (RR)	0.14461	1.09009	15.79680
	SN->Q (FR)	0.13052	1.19291	17.40450

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)	0.19811	1.02313	16.06420
	QN->Q (RF)	0.01865	0.61511	10.96720
	RN->Q (FF)	0.13560	1.06798	17.47120
sky130_osu_sc_18T_ms__dffsr_l	CK->Q (RF)	0.20304	1.13700	15.87210
	QN->Q (RF)	0.02073	0.65939	10.76460
	RN->Q (FF)	0.13610	1.17492	17.27360

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)	0.17791	0.53259	6.21517
	RN->QN (FR)	0.11159	0.57172	7.61808
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RR)	0.17995	0.58643	6.31228
	RN->QN (FR)	0.11735	0.62973	7.71051

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)	0.14942	0.50886	6.05210
	RN->QN (RF)	0.11741	0.48716	6.14610
	SN->QN (FF)	0.10350	0.59203	7.74629
sky130_osu_sc_18T_ms__dffsr_l	CK->QN (RF)	0.14929	0.54086	5.83331
	RN->QN (RF)	0.11764	0.51981	5.92609
	SN->QN (FF)	0.10353	0.62127	7.52456

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)	-0.04095	-0.05716	0.01397
	setup	CK (R)	0.13436	0.17680	0.33408
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.04089	-0.05725	0.01404
	setup	CK (R)	0.13386	0.17619	0.33100

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)	-0.07559	-0.25498	-2.35948
	setup	CK (R)	0.10231	0.26675	3.45700
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07498	-0.25498	-2.35734
	setup	CK (R)	0.09814	0.26675	3.45700

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)	-0.04095	-0.05716	0.01397
	setup	CK (R)	0.13436	0.17680	0.33408
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.04089	-0.05725	0.01404
	setup	CK (R)	0.13386	0.17619	0.33100

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)	-0.07559	-0.25498	-2.35948
	setup	CK (R)	0.10231	0.26675	3.45700
sky130_osu_sc_18T_ms__dffsr_l	hold	CK (R)	-0.07498	-0.25498	-2.35734
	setup	CK (R)	0.09814	0.26675	3.45700

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)	0.10189	0.14260	0.76827
	removal	CK (R)	-0.01220	-0.01569	-0.05994
	hold	SN (R)	-0.09805	-0.21183	-1.09120
	setup	SN (R)	0.11931	0.26634	3.72261
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.10160	0.14199	0.76663
	removal	CK (R)	-0.01220	-0.01569	-0.05994
	hold	SN (R)	-0.09704	-0.20791	-1.07658
	setup	SN (R)	0.11860	0.26074	3.67628

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)	0.10189	0.14260	0.76827
	removal	CK (R)	-0.01220	-0.01569	-0.05994
	hold	SN (R)	-0.09805	-0.21183	-1.09679
	hold	SN (R)	-0.09824	-0.21183	-1.09120
	setup	SN (R)	0.11931	0.26470	3.48019
	setup	SN (R)	0.11544	0.26634	3.72261
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.10160	0.14199	0.76663
	removal	CK (R)	-0.01220	-0.01569	-0.05994
	hold	SN (R)	-0.09888	-0.20791	-1.09436
	hold	SN (R)	-0.09704	-0.20791	-1.07658
	setup	SN (R)	0.11860	0.25729	3.42055
	setup	SN (R)	0.11076	0.26074	3.67628

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 ()	0.09159	0.47119	13.33370
	min_pulse_width	RN ()	0.09159	0.47119	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	RN ()	0.09159	0.47119	13.33370
	min_pulse_width	RN ()	0.08804	0.47119	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)	0.02890	0.06276	3.75310
	removal	CK (R)	-0.01039	-0.04707	-0.18981
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.02783	0.06276	3.66316
	removal	CK (R)	-0.01039	-0.04707	-0.18981

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)	0.02890	0.06276	3.75310
	removal	CK (R)	-0.01039	-0.04707	-0.18981
sky130_osu_sc_18T_ms__dffsr_l	recovery	CK (R)	0.02783	0.06276	3.66316
	removal	CK (R)	-0.01039	-0.04707	-0.18981

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 ()	0.10223	0.47119	13.33370
	min_pulse_width	SN ()	0.09869	0.47119	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	SN ()	0.10223	0.47119	13.33370
	min_pulse_width	SN ()	0.09514	0.47119	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 ()	0.07740	0.47119	13.33370
	min_pulse_width	CK ()	0.10223	0.47119	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.07740	0.47119	13.33370
	min_pulse_width	CK ()	0.10223	0.47119	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 ()	0.17319	0.47119	13.33370
	min_pulse_width	CK ()	0.08450	0.47119	13.33370
sky130_osu_sc_18T_ms__dffsr_l	min_pulse_width	CK ()	0.17319	0.47119	13.33370
	min_pulse_width	CK ()	0.08450	0.47119	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	0.02012	0.01972	0.02926
	RN	0.03684	0.03410	0.02465
	SN	-0.00206	-0.19292	-3.98120
	SN	0.03499	0.03074	-0.00912
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01861	0.01831	0.04341
	RN	0.03531	0.03252	0.04211
	SN	-0.00206	-0.15530	-2.77337
	SN	0.03348	0.02933	0.00950

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	0.02121	0.01881	0.01847
	RN	-0.00206	-0.19292	-3.98119
	RN	0.04315	0.04255	0.04929
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01968	0.01870	0.05646
	RN	-0.00206	-0.15530	-2.77336
	RN	0.04162	0.04246	0.08762

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	0.02118	0.01881	0.01889
	RN	-0.00206	-0.19271	-3.97362
	RN	0.04313	0.04258	0.05051
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01966	0.01871	0.05705
	RN	-0.00206	-0.15544	-2.77707
	RN	0.04161	0.04249	0.08857

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	0.02006	0.01948	0.02633
	RN	0.03678	0.03401	0.02445
	SN	-0.00206	-0.19271	-3.97405
	SN	0.03494	0.03079	-0.00755
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01855	0.01822	0.04370
	RN	0.03525	0.03252	0.04038
	SN	-0.00206	-0.15544	-2.77732
	SN	0.03342	0.02929	0.00953

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	-0.00527	-0.00541	-0.00541
	(!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)	0.02594	0.02722	0.11959
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00981	0.01127	0.10232
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00979	0.01126	0.10238
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00987	0.01135	0.10239
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00527	-0.00541	-0.00541
	(!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)	0.02594	0.02722	0.11959
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00981	0.01127	0.10232
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00979	0.01126	0.10238
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00987	0.01135	0.10239

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	0.00541	0.00541	0.00541
	(!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)	0.03754	0.03986	0.13378
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01643	0.01911	0.11151
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01663	0.01921	0.11149
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01636	0.01901	0.11146
sky130_osu_sc_18T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00541	0.00541	0.00541
	(!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)	0.03753	0.03985	0.13377
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01641	0.01909	0.11150
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01662	0.01920	0.11148
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01634	0.01900	0.11145

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)	0.00455	0.01060	0.19856
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02095	0.02651	0.22507
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)	0.00455	0.01060	0.19857
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02095	0.02649	0.22508

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)	0.01607	0.02660	0.21496
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03358	0.04365	0.24041
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)	0.01605	0.02659	0.21495
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03356	0.04361	0.24040

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)	-0.01234	-0.01245	-0.01241
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01157	-0.01269	-0.01273
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01162	-0.01216	-0.01220
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00826	0.01002	0.10680
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)	-0.01234	-0.01245	-0.01242
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.01155	-0.01266	-0.01270
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.01162	-0.01216	-0.01219
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00827	0.00996	0.10681

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)	0.01239	0.01249	0.01246
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01270	0.01283	0.01276
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01219	0.01228	0.01224
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02640	0.02806	0.12316
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)	0.01239	0.01249	0.01246
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01267	0.01281	0.01274
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01218	0.01227	0.01223
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02639	0.02803	0.12316

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)	-0.00141	0.00424	0.19091
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01111	0.01546	0.21552
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01087	0.01536	0.21542
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00172	0.00397	0.18973
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00645	0.01694	0.35062
sky130_osu_sc_18T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00141	0.00424	0.19090
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01110	0.01545	0.21550
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01085	0.01532	0.21541
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00172	0.00397	0.18973
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00645	0.01695	0.35063

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)	0.05652	0.06513	0.29962
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02287	0.03312	0.22028
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03913	0.04744	0.24594
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03918	0.04795	0.24597
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05349	0.07080	0.37127
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02570	0.03560	0.22151
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03040	0.04822	0.38214
sky130_osu_sc_18T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05652	0.06503	0.29963
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02287	0.03313	0.22028
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03913	0.04744	0.24594
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03918	0.04795	0.24597
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05348	0.07085	0.37126
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02570	0.03561	0.22151
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03038	0.04825	0.38213

SKY130_OSU_SC_18T_MS__DFFSx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00510	0.00893	0.01479	3.93029	3.93169
sky130_osu_sc_18T_ms__dffs_l	0.00510	0.00893	0.01479	2.96729	2.93610

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dffs_1	0.00000	0.53689	0.77426
sky130_osu_sc_18T_ms__dffs_l	0.00000	0.37753	0.61490

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)	0.13229	0.96416	15.67180
	QN->Q (FR)	0.02207	0.68348	11.90140
	SN->Q (FR)	0.10286	1.06232	17.15890
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RR)	0.13265	1.06457	15.83190
	QN->Q (FR)	0.02301	0.71756	11.71370
	SN->Q (FR)	0.10345	1.15925	17.30590

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)	0.19028	1.02823	15.90460
	QN->Q (RF)	0.02046	0.65608	11.50570
sky130_osu_sc_18T_ms__dffs_l	CK->Q (RF)	0.19128	1.13295	16.10350
	QN->Q (RF)	0.02064	0.66092	10.85170

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)	0.16873	0.52646	6.09872
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RR)	0.16805	0.57444	6.30845

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)	0.10874	0.46245	5.89937
	SN->QN (FF)	0.07914	0.56009	7.38088
sky130_osu_sc_18T_ms__dffs_l	CK->QN (RF)	0.10685	0.48818	5.73182
	SN->QN (FF)	0.07772	0.58203	7.20272

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)	-0.02863	-0.04123	0.06058
	setup	CK (R)	0.09588	0.14465	0.25727
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.02785	-0.04123	0.06048
	setup	CK (R)	0.09581	0.14458	0.25803

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)	-0.07128	-0.24526	-2.76383
	setup	CK (R)	0.09319	0.25890	3.46145
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.07073	-0.24525	-2.76870
	setup	CK (R)	0.09315	0.25890	3.46148

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)	-0.02863	-0.04123	0.06058
	setup	CK (R)	0.09588	0.14465	0.25727
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.02785	-0.04123	0.06048
	setup	CK (R)	0.09581	0.14458	0.25803

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)	-0.07128	-0.24526	-2.76383
	setup	CK (R)	0.09319	0.25890	3.46145
sky130_osu_sc_18T_ms__dffs_l	hold	CK (R)	-0.07073	-0.24525	-2.76870
	setup	CK (R)	0.09315	0.25890	3.46148

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)	0.02859	0.06276	2.68129
	removal	CK (R)	-0.01315	-0.04707	-0.46286
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.02782	0.05884	2.54273
	removal	CK (R)	-0.01315	-0.04707	-0.46286

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)	0.02859	0.06276	2.68129
	removal	CK (R)	-0.01315	-0.04707	-0.46286
sky130_osu_sc_18T_ms__dffs_l	recovery	CK (R)	0.02782	0.05884	2.54273
	removal	CK (R)	-0.01315	-0.04707	-0.46286

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 ()	0.07030	0.47119	13.33370
	min_pulse_width	SN ()	0.07030	0.47119	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	SN ()	0.07030	0.47119	13.33370
	min_pulse_width	SN ()	0.06676	0.47119	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 ()	0.05611	0.47119	13.33370
	min_pulse_width	CK ()	0.09514	0.47119	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.05611	0.47119	13.33370
	min_pulse_width	CK ()	0.09159	0.47119	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 ()	0.13416	0.47119	13.33370
	min_pulse_width	CK ()	0.07740	0.47119	13.33370
sky130_osu_sc_18T_ms__dffs_l	min_pulse_width	CK ()	0.13416	0.47119	13.33370
	min_pulse_width	CK ()	0.07740	0.47119	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	0.01597	0.01313	-0.01064
	SN	-0.00206	-0.18570	-3.73623
	SN	0.02938	0.02584	-0.02475
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01431	0.01403	0.04257
	SN	-0.00206	-0.15689	-2.82078
	SN	0.02775	0.02697	0.04113

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	0.01821	0.01537	0.01064
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01652	0.01557	0.05420

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	0.01819	0.01537	0.01182
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01652	0.01563	0.05636

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	0.01592	0.01307	-0.01182
	SN	-0.00206	-0.18574	-3.73711
	SN	0.02934	0.02583	-0.02571
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01426	0.01416	0.04169
	SN	-0.00206	-0.15589	-2.79098
	SN	0.02770	0.02699	0.04120

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	-0.00533	-0.00547	-0.00547
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01965	0.02116	0.11747
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00867	0.01023	0.10197
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00534	-0.00547	-0.00547
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01965	0.02115	0.11747
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00867	0.01022	0.10197

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	0.00547	0.00547	0.00547
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03192	0.03445	0.13060
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01575	0.01856	0.11174
sky130_osu_sc_18T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00547	0.00547	0.00547
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03192	0.03445	0.13060
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01574	0.01856	0.11174

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)	-0.00946	-0.00950	-0.00950
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00625	0.00954	0.13635
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)	-0.00946	-0.00950	-0.00950
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00625	0.00954	0.13635

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)	0.00950	0.00958	0.00953
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01869	0.02386	0.15124
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)	0.00950	0.00958	0.00953
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01868	0.02386	0.15124

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)	-0.00144	0.00423	0.19113
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00188	0.00386	0.18986
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00525	0.01645	0.35157
sky130_osu_sc_18T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00144	0.00423	0.19113
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00188	0.00385	0.18985
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00525	0.01644	0.35157

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)	0.05013	0.05881	0.29550
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02281	0.03305	0.22047
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04776	0.06545	0.36835
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02578	0.03571	0.22183
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02958	0.04778	0.38343
sky130_osu_sc_18T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.05013	0.05882	0.29549
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02281	0.03306	0.22047
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.04776	0.06546	0.36835
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02577	0.03573	0.22182
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02958	0.04779	0.38342

SKY130_OSU_SC_18T_MS__DFFx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00526	0.01453	4.24161	4.19918
sky130_osu_sc_18T_ms__dff_l	0.00526	0.01453	2.86803	2.85838

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__dff_1	0.00000	0.66067	0.86827
sky130_osu_sc_18T_ms__dff_l	0.00000	0.50131	0.70891

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)	0.11842	0.94421	16.01830
	QN->Q (FR)	0.02076	0.67044	11.84010
sky130_osu_sc_18T_ms__dff_l	CK->Q (RR)	0.12322	1.04510	15.39670
	QN->Q (FR)	0.02353	0.72585	11.73720

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)	0.16472	0.99003	16.18350
	QN->Q (RF)	0.01855	0.61536	11.01310
sky130_osu_sc_18T_ms__dff_l	CK->Q (RF)	0.17068	1.10003	15.70300
	QN->Q (RF)	0.02070	0.65257	10.61190

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)	0.14489	0.49514	6.17467
sky130_osu_sc_18T_ms__dff_l	CK->QN (RR)	0.14787	0.55222	6.23866

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)	0.09645	0.44521	5.93508
sky130_osu_sc_18T_ms__dff_l	CK->QN (RF)	0.09760	0.47466	5.55996

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)	-0.02424	-0.03923	0.04665
	setup	CK (R)	0.08070	0.13247	0.25774
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.02424	-0.03923	0.04608
	setup	CK (R)	0.08067	0.13177	0.25998

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)	-0.06009	-0.23929	-2.79056
	setup	CK (R)	0.07845	0.25506	3.42096
sky130_osu_sc_18T_ms__dff_l	hold	CK (R)	-0.06028	-0.23929	-2.78579
	setup	CK (R)	0.07845	0.25506	3.42129

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 ()	0.05257	0.47119	13.33370
	min_pulse_width	CK ()	0.08450	0.47119	13.33370
sky130_osu_sc_18T_ms__dff_l	min_pulse_width	CK ()	0.05257	0.47119	13.33370
	min_pulse_width	CK ()	0.08450	0.47119	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 ()**	0.11997	0.47119	13.33370
	min_pulse_width	**CK ()**	0.05966	0.47119	13.33370
sky130_osu_sc_18T_ms__dff_l	**min_pulse_width**	**CK ()**	0.11997	0.47119	13.33370
	min_pulse_width	**CK ()**	0.05966	0.47119	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	0.01667	0.01633	0.03140
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01516	0.01511	0.04874

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	0.01846	0.01629	0.02106
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01699	0.01583	0.05068

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	0.01845	0.01640	0.02070
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01698	0.01584	0.05203

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	0.01662	0.01672	0.02884
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01511	0.01516	0.04797

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	-0.00463	-0.00536	-0.00540
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01779	0.01998	0.11706
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00464	-0.00536	-0.00540
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01780	0.01998	0.11706

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	0.00537	0.00539	0.00541
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03264	0.03532	0.13167
sky130_osu_sc_18T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00537	0.00539	0.00541
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.03265	0.03533	0.13167

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00145	0.00424	0.19110
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00186	0.00388	0.18964
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00145	0.00424	0.19109
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00193	0.00389	0.18964

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)	0.02272	0.03307	0.22034
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04845	0.05739	0.29518
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04839	0.06659	0.37207
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02567	0.03570	0.22167
sky130_osu_sc_18T_ms__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02272	0.03308	0.22034
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.04845	0.05740	0.29517
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.04840	0.06652	0.37208
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02567	0.03570	0.22167

SKY130_OSU_SC_18T_MS__INVx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00511	3.86645
sky130_osu_sc_18T_ms__inv_10	0.04805	32.29088
sky130_osu_sc_18T_ms__inv_2	0.00980	7.32504
sky130_osu_sc_18T_ms__inv_3	0.01461	10.44596
sky130_osu_sc_18T_ms__inv_4	0.01933	13.97789
sky130_osu_sc_18T_ms__inv_6	0.02898	20.61412
sky130_osu_sc_18T_ms__inv_8	0.03852	26.76280
sky130_osu_sc_18T_ms__inv_l	0.00405	2.69633

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__inv_1	0.00000	0.10852	0.21690
sky130_osu_sc_18T_ms__inv_10	0.00000	1.08515	2.16905
sky130_osu_sc_18T_ms__inv_2	0.00000	0.21703	0.43381
sky130_osu_sc_18T_ms__inv_3	0.00000	0.32555	0.65072
sky130_osu_sc_18T_ms__inv_4	0.00000	0.43406	0.86762
sky130_osu_sc_18T_ms__inv_6	0.00000	0.65109	1.30143
sky130_osu_sc_18T_ms__inv_8	0.00000	0.86812	1.73524
sky130_osu_sc_18T_ms__inv_l	0.00000	0.02884	0.05758

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)**	0.01914	0.58714	10.04410
sky130_osu_sc_18T_ms__inv_10	**A->Y (FR)**	0.03444	0.40022	9.94377
sky130_osu_sc_18T_ms__inv_2	**A->Y (FR)**	0.01657	0.50616	9.86884
sky130_osu_sc_18T_ms__inv_3	**A->Y (FR)**	0.01885	0.47692	9.93544
sky130_osu_sc_18T_ms__inv_4	**A->Y (FR)**	0.01999	0.44881	9.87868
sky130_osu_sc_18T_ms__inv_6	**A->Y (FR)**	0.02365	0.42240	9.94724
sky130_osu_sc_18T_ms__inv_8	**A->Y (FR)**	0.02861	0.40655	9.91416
sky130_osu_sc_18T_ms__inv_l	**A->Y (FR)**	0.02139	0.63710	10.09630

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)**	0.01627	0.51179	8.94863
sky130_osu_sc_18T_ms__inv_10	**A->Y (RF)**	0.03060	0.29691	8.43054
sky130_osu_sc_18T_ms__inv_2	**A->Y (RF)**	0.01424	0.42263	8.70911
sky130_osu_sc_18T_ms__inv_3	**A->Y (RF)**	0.01605	0.38916	8.73235
sky130_osu_sc_18T_ms__inv_4	**A->Y (RF)**	0.01652	0.35963	8.69402
sky130_osu_sc_18T_ms__inv_6	**A->Y (RF)**	0.02118	0.32938	8.69885
sky130_osu_sc_18T_ms__inv_8	**A->Y (RF)**	0.02558	0.31076	8.60540
sky130_osu_sc_18T_ms__inv_l	**A->Y (RF)**	0.01799	0.54722	8.74087

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	0.00803	0.01185	0.04592
sky130_osu_sc_18T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.07420	0.12579	0.45194
sky130_osu_sc_18T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01446	0.02381	0.08976
sky130_osu_sc_18T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02217	0.03532	0.13384
sky130_osu_sc_18T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.02871	0.05206	0.17766
sky130_osu_sc_18T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.04287	0.07400	0.26473
sky130_osu_sc_18T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.05779	0.09773	0.35509
sky130_osu_sc_18T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00638	0.00885	0.03385

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	-0.00200	-0.00119	0.00706
sky130_osu_sc_18T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02026	-0.01452	0.06945
sky130_osu_sc_18T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00597	-0.00378	0.01271
sky130_osu_sc_18T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00785	-0.00461	0.02010
sky130_osu_sc_18T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.01148	-0.00680	0.02627
sky130_osu_sc_18T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01743	-0.00984	0.03927
sky130_osu_sc_18T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.02108	-0.01252	0.05216
sky130_osu_sc_18T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00151	-0.00058	0.00969

SKY130_OSU_SC_18T_MS__MUX2

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.06860	0.06840	0.01039	0.06079

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_ms__mux2_1	0.00000	0.22111	0.23292

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)	-	0.00931	0.05382	0.18807
	A1->Y (RR)	-	0.00989	0.05391	0.18712
	S0->Y (RR)	(!A0 * A1)	0.03214	0.08349	-0.30831
	S0->Y (FR)	(A0 * !A1)	0.02994	0.18147	1.34354

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)	-	0.00847	0.06492	0.21523
	A1->Y (FF)	-	0.00867	0.06468	0.21396
	S0->Y (FF)	(!A0 * A1)	0.04053	0.17952	1.12759
	S0->Y (RF)	(A0 * !A1)	0.02044	0.08332	-0.11475

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	-	-0.00867	-0.00868	-0.00871
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00577	-0.00577	-0.00579
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00962	0.02165	0.20758
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00588	0.00205	0.18777

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	-	0.00867	0.00869	0.00871
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00578	0.00578	0.00579
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00146	0.01016	0.19770
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.02216	0.03216	0.21839

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)	-0.00212	-0.00211	-0.00212

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)	0.00213	0.00211	0.00212

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)	-0.00254	-0.00253	-0.00253

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00254	0.00253	0.00253

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00223	0.00598	0.19244
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00221	0.00622	0.19277

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)	0.01666	0.02691	0.21326
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01512	0.02608	0.21286

SKY130_OSU_SC_18T_MS__NAND2x

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00513	0.00509	3.38314
sky130_osu_sc_18T_ms__nand2_l	0.00406	0.00404	2.40606

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nand2_1	0.00000	0.10854	0.43381
sky130_osu_sc_18T_ms__nand2_l	0.00000	0.02887	0.11516

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)	0.01934	0.56838	9.39070
	B->Y (FR)	0.02296	0.56510	9.25014
sky130_osu_sc_18T_ms__nand2_l	A->Y (FR)	0.02153	0.61782	9.50033
	B->Y (FR)	0.02608	0.61802	9.44168

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)	0.02089	0.57905	9.85577
	B->Y (RF)	0.02426	0.57461	9.80207
sky130_osu_sc_18T_ms__nand2_l	A->Y (RF)	0.02325	0.62661	9.77953
	B->Y (RF)	0.02640	0.62523	9.70291

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	0.00857	0.01172	0.04510
	B	0.00000	0.00000	0.00000
	B	0.01113	0.01461	0.04850
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00676	0.00904	0.03260
	B	0.00000	0.00000	0.00000
	B	0.00868	0.01085	0.03508

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	-0.00145	-0.00079	0.00708
	B	0.00000	0.00000	0.00000
	B	-0.00141	-0.00108	0.00480
sky130_osu_sc_18T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00117	-0.00032	0.00928
	B	0.00000	0.00000	0.00000
	B	-0.00115	-0.00073	0.00670

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)	-0.00611	-0.00614	-0.00615
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00462	-0.00464	-0.00465

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)	0.00613	0.00615	0.00617
sky130_osu_sc_18T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00463	0.00468	0.00466

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)	-0.00563	-0.00567	-0.00565
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00426	-0.00428	-0.00427

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)	0.00566	0.00572	0.00566
sky130_osu_sc_18T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00428	0.00430	0.00428

SKY130_OSU_SC_18T_MS__NOR2x

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00513	0.00543	2.17446
sky130_osu_sc_18T_ms__nor2_l	0.00399	0.00432	1.59467

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__nor2_1	0.00000	0.07070	0.21690
sky130_osu_sc_18T_ms__nor2_l	0.00000	0.01928	0.05758

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)	0.03592	0.67397	10.00340
	B->Y (FR)	0.02694	0.66237	9.96266
sky130_osu_sc_18T_ms__nor2_l	A->Y (FR)	0.03895	0.72365	9.92665
	B->Y (FR)	0.03079	0.72509	10.08670

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)	0.02214	0.41987	6.18715
	B->Y (RF)	0.01736	0.40990	6.16772
sky130_osu_sc_18T_ms__nor2_l	A->Y (RF)	0.02367	0.45679	6.23420
	B->Y (RF)	0.01915	0.44868	6.21757

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	0.01195	0.01264	0.02987
	B	0.00000	0.00000	0.00000
	B	0.00882	0.01234	0.05394
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00904	0.00971	0.02617
	B	0.00000	0.00000	0.00000
	B	0.00690	0.00920	0.03912

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	0.00107	0.00156	0.01259
	B	0.00000	0.00000	0.00000
	B	-0.00151	-0.00062	0.01012
sky130_osu_sc_18T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00069	0.00147	0.01495
	B	0.00000	0.00000	0.00000
	B	-0.00108	-0.00016	0.01295

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)	-0.00467	-0.00540	-0.00543
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00347	-0.00397	-0.00399

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)	0.00540	0.00546	0.00544
sky130_osu_sc_18T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00397	0.00402	0.00399

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)	-0.00251	-0.00252	-0.00252
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00187	-0.00187	-0.00188

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)	0.00261	0.00262	0.00255
sky130_osu_sc_18T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00193	0.00195	0.00190

SKY130_OSU_SC_18T_MS__OAI21

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00517	0.00524	0.00450	2.12165

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai21_l	0.00000	0.05700	0.27449

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)	0.03574	0.66966	9.90728
	A1->Y (FR)	0.04796	0.68660	9.96027
	B0->Y (FR)	0.02591	0.59023	8.73296

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)	0.03060	0.51468	7.57218
	A1->Y (RF)	0.03619	0.51054	7.35790
	B0->Y (RF)	0.02352	0.54388	8.11397

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	0.01240	0.01446	0.04825
	A1	0.00000	0.00000	0.00000
	A1	0.01551	0.01596	0.03149
	B0	0.00738	0.01033	0.04528

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	0.00017	0.00030	0.00744
	A1	0.00000	0.00000	0.00000
	A1	0.00282	0.00270	0.01003
	B0	0.00085	0.00178	0.01518

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)	-0.00252	-0.00258	-0.00253
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00534	-0.00548	-0.00546
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00553	-0.00555	-0.00553

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)	0.00261	0.00265	0.00256
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00542	0.00550	0.00546
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00553	0.00559	0.00555

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)	-0.00459	-0.00532	-0.00534
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00528	-0.00543	-0.00542
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00547	-0.00551	-0.00548

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)	0.00531	0.00537	0.00535
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00539	0.00546	0.00542
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00547	0.00551	0.00549

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)	-0.00473	-0.00476	-0.00479

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)	0.00478	0.00482	0.00481

SKY130_OSU_SC_18T_MS__OAI22

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00502	0.00528	0.00543	0.00531	2.12671

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__oai22_1	0.00000	0.10607	0.43381

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)	0.05139	0.68666	9.90825
	A1->Y (FR)	0.04244	0.67336	9.87245
	B0->Y (FR)	0.02972	0.66163	9.88021
	B1->Y (FR)	0.03885	0.67468	9.91808

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)	0.05313	0.55112	7.76346
	A1->Y (RF)	0.04191	0.53208	7.63368
	B0->Y (RF)	0.03478	0.55855	8.14294
	B1->Y (RF)	0.04696	0.59212	8.48758

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	0.02026	0.02067	0.03478
	A1	0.01551	0.01794	0.05514
	B0	0.00946	0.01216	0.04891
	B1	0.01278	0.01329	0.02807

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_ms__oai22_l	A0	0.00184	0.00171	0.00915
	A1	-0.00072	-0.00057	0.00688
	B0	-0.00070	-0.00012	0.00969
	B1	0.00183	0.00219	0.01134

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)	-0.00466	-0.00539	-0.00543
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00466	-0.00539	-0.00543
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00530	-0.00544	-0.00543
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00548	-0.00551	-0.00549

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)	0.00541	0.00546	0.00544
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00541	0.00547	0.00544
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00541	0.00547	0.00543
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00549	0.00553	0.00550

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)	-0.00249	-0.00250	-0.00250
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00249	-0.00250	-0.00250
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00527	-0.00538	-0.00540
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00546	-0.00550	-0.00547

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)	0.00259	0.00261	0.00253
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00259	0.00261	0.00253
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00536	0.00538	0.00540
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00546	0.00550	0.00549

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)	-0.00247	-0.00249	-0.00249
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00247	-0.00249	-0.00249
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00592	-0.00607	-0.00605
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00601	-0.00606	-0.00610

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)	0.00257	0.00259	0.00252
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00257	0.00259	0.00252
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00607	0.00614	0.00605
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00609	0.00614	0.00612

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)	-0.00458	-0.00532	-0.00535
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00460	-0.00532	-0.00535
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00601	-0.00615	-0.00615
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00609	-0.00611	-0.00618

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)	0.00533	0.00538	0.00536
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00533	0.00540	0.00536
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00619	0.00625	0.00616
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00617	0.00617	0.00621

SKY130_OSU_SC_18T_MS__OR2x

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00547	0.00525	4.04545
sky130_osu_sc_18T_ms__or2_2	0.00547	0.00526	7.65832
sky130_osu_sc_18T_ms__or2_4	0.00547	0.00526	14.60472
sky130_osu_sc_18T_ms__or2_8	0.00549	0.00530	27.22359
sky130_osu_sc_18T_ms__or2_l	0.00440	0.00415	2.81683

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__or2_1	0.00000	0.12502	0.21716
sky130_osu_sc_18T_ms__or2_2	0.00000	0.17934	0.43406
sky130_osu_sc_18T_ms__or2_4	0.00000	0.28798	0.86787
sky130_osu_sc_18T_ms__or2_8	0.00000	0.50526	1.73549
sky130_osu_sc_18T_ms__or2_l	0.00000	0.03374	0.05776

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)	0.04589	0.39345	5.85072
	B->Y (RR)	0.03978	0.37364	5.92894
sky130_osu_sc_18T_ms__or2_2	A->Y (RR)	0.05137	0.34727	5.78873
	B->Y (RR)	0.04504	0.32900	5.83849
sky130_osu_sc_18T_ms__or2_4	A->Y (RR)	0.06712	0.34976	6.02934
	B->Y (RR)	0.06072	0.33378	6.04553
sky130_osu_sc_18T_ms__or2_8	A->Y (RR)	0.09745	0.39405	6.30370
	B->Y (RR)	0.09098	0.38153	6.28378
sky130_osu_sc_18T_ms__or2_l	A->Y (RR)	0.05046	0.45597	6.06322
	B->Y (RR)	0.04449	0.43795	6.08039

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)	0.06501	0.51562	7.46184
	B->Y (FF)	0.05252	0.49820	7.63562
sky130_osu_sc_18T_ms__or2_2	A->Y (FF)	0.07519	0.47811	7.32747
	B->Y (FF)	0.06274	0.46232	7.46005
sky130_osu_sc_18T_ms__or2_4	A->Y (FF)	0.10320	0.49561	7.47261
	B->Y (FF)	0.09079	0.48336	7.55091
sky130_osu_sc_18T_ms__or2_8	A->Y (FF)	0.16295	0.56259	7.47121
	B->Y (FF)	0.15059	0.55619	7.49259
sky130_osu_sc_18T_ms__or2_l	A->Y (FF)	0.07041	0.54596	7.12812
	B->Y (FF)	0.05809	0.53682	7.37958

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	0.00871	0.01070	0.07484
	B	0.00000	0.00000	0.00000
	B	0.00633	0.01163	0.11654
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01539	0.01766	0.08358
	B	0.00000	0.00000	0.00000
	B	0.01284	0.01798	0.11966
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02993	0.03310	0.10483
	B	0.00000	0.00000	0.00000
	B	0.02731	0.03275	0.13598
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.06349	0.06618	0.13594
	B	0.00000	0.00000	0.00000
	B	0.06074	0.06480	0.16444
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00655	0.00879	0.07086
	B	0.00000	0.00000	0.00000
	B	0.00497	0.00948	0.09651

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	0.01952	0.02222	0.09233
	B	0.00000	0.00000	0.00000
	B	0.01604	0.02445	0.17451
sky130_osu_sc_18T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.02466	0.02736	0.09738
	B	0.00000	0.00000	0.00000
	B	0.02118	0.02911	0.17715
sky130_osu_sc_18T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.04061	0.03995	0.10837
	B	0.00000	0.00000	0.00000
	B	0.03711	0.04193	0.18322
sky130_osu_sc_18T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.08282	0.06552	0.13176
	B	0.00000	0.00000	0.00000
	B	0.07906	0.06805	0.19825
sky130_osu_sc_18T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01529	0.01777	0.07700
	B	0.00000	0.00000	0.00000
	B	0.01274	0.01883	0.13265

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)	-0.00470	-0.00544	-0.00546
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00470	-0.00542	-0.00545
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00470	-0.00543	-0.00546
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00470	-0.00550	-0.00546
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00348	-0.00401	-0.00401

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)	0.00543	0.00549	0.00546
sky130_osu_sc_18T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00543	0.00549	0.00546
sky130_osu_sc_18T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00543	0.00550	0.00546
sky130_osu_sc_18T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00543	0.00550	0.00546
sky130_osu_sc_18T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00399	0.00401	0.00401

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)	-0.00252	-0.00258	-0.00253
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00252	-0.00258	-0.00253
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00252	-0.00258	-0.00253
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00252	-0.00259	-0.00253
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00191	-0.00195	-0.00192

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)	0.00264	0.00266	0.00256
sky130_osu_sc_18T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00264	0.00262	0.00256
sky130_osu_sc_18T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00264	0.00262	0.00256
sky130_osu_sc_18T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00264	0.00262	0.00256
sky130_osu_sc_18T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00199	0.00200	0.00194

SKY130_OSU_SC_18T_MS__TBUFIx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00543	0.00696	2.19052
sky130_osu_sc_18T_ms__tbufi_l	0.00433	0.00557	1.57585

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tbufi_1	0.00000	0.10861	0.43381
sky130_osu_sc_18T_ms__tbufi_l	0.00000	0.02890	0.11516

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)	0.02601	0.66090	9.98881
	OE->Y (FR)	0.03385	0.36943	5.34313
	OE->Y (RR)	0.04963	0.46484	6.21317
sky130_osu_sc_18T_ms__tbufi_l	A->Y (FR)	0.02981	0.72187	10.01510
	OE->Y (FR)	0.03616	0.36923	5.34294
	OE->Y (RR)	0.05398	0.53437	6.29319

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)	0.02043	0.48986	7.39260
	OE->Y (FF)	0.03383	0.36941	5.34313
	OE->Y (RF)	0.02042	0.48362	7.27076
sky130_osu_sc_18T_ms__tbufi_l	A->Y (RF)	0.02302	0.53305	7.37423
	OE->Y (FF)	0.03652	0.36922	5.34301
	OE->Y (RF)	0.02330	0.52573	7.23417

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	0.00821	0.01099	0.04709
	OE	0.00000	0.00000	0.00000
	OE	0.00841	0.01522	0.16687
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00646	0.00855	0.03468
	OE	0.00000	0.00000	0.00000
	OE	0.00621	0.01219	0.13214

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	-0.00155	-0.00078	0.00880
	OE	0.00000	0.00000	0.00000
	OE	0.00543	0.01354	0.19744
sky130_osu_sc_18T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00111	-0.00030	0.01105
	OE	0.00000	0.00000	0.00000
	OE	0.00387	0.01045	0.14822

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)	-0.00430	-0.00436	-0.00432
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00375	-0.00378	-0.00377
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00334	-0.00339	-0.00336
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00296	-0.00297	-0.00297

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)	0.00430	0.00436	0.00432
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00382	0.00385	0.00380
sky130_osu_sc_18T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00334	0.00339	0.00336
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00300	0.00302	0.00299

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)	0.00320	0.01196	0.20211
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00292	0.01173	0.20172
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00224	0.00934	0.15184
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00202	0.00915	0.15167

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)	0.00963	0.02026	0.20988
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00955	0.02035	0.21002
sky130_osu_sc_18T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00780	0.01544	0.15760
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00778	0.01556	0.15763

SKY130_OSU_SC_18T_MS__TNBUFIx

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.00542	0.00837	2.23842
sky130_osu_sc_18T_ms__tnbufi_l	0.00433	0.00647	1.57631

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__tnbufi_1	0.00000	0.18087	0.21703
sky130_osu_sc_18T_ms__tnbufi_l	0.00000	0.04807	0.05767

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)	0.02603	0.66675	10.12780
	OE->Y (RR)	0.02182	0.37043	5.34414
	OE->Y (FR)	0.03456	0.67907	10.17200
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (FR)	0.02991	0.72187	10.01670
	OE->Y (RR)	0.02287	0.37078	5.34449
	OE->Y (FR)	0.03795	0.71968	9.83418

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)	0.02019	0.49393	7.49860
	OE->Y (RF)	0.02163	0.37042	5.34409
	OE->Y (FF)	0.03580	0.42269	5.72643
sky130_osu_sc_18T_ms__tnbufi_l	A->Y (RF)	0.02271	0.53299	7.37596
	OE->Y (RF)	0.02266	0.37076	5.34449
	OE->Y (FF)	0.04024	0.45937	5.51208

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	0.00842	0.01140	0.04674
	OE	0.00000	0.00000	0.00000
	OE	0.02120	0.03292	0.22173
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00668	0.00876	0.03488
	OE	0.00000	0.00000	0.00000
	OE	0.01627	0.02467	0.16558

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	-0.00184	-0.00106	0.00838
	OE	0.00000	0.00000	0.00000
	OE	0.01861	0.02983	0.19062
sky130_osu_sc_18T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00139	-0.00057	0.01078
	OE	0.00000	0.00000	0.00000
	OE	0.01422	0.02215	0.13577

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)	-0.00365	-0.00371	-0.00367
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00315	-0.00318	-0.00317
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00272	-0.00277	-0.00273
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00238	-0.00239	-0.00239

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)	0.00365	0.00371	0.00367
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00322	0.00324	0.00320
sky130_osu_sc_18T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00272	0.00277	0.00273
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00242	0.00242	0.00240

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)	-0.00664	0.00229	0.19279
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00664	0.00227	0.19283
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00488	0.00225	0.14521
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00486	0.00223	0.14521

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)	0.01599	0.02953	0.21893
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01577	0.02913	0.21877
sky130_osu_sc_18T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01230	0.02142	0.16407
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01215	0.02178	0.16401

SKY130_OSU_SC_18T_MS__XNOR2

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.01072	0.00977	2.25505

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xnor2_l	0.00000	0.35440	0.65084

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	0.06277	0.49434	6.40639
	A->Y (FR)	!B	0.03302	0.66815	10.06120
	B->Y (RR)	A	0.05038	0.48303	6.51435
	B->Y (FR)	!A	0.04790	0.68793	10.14480

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	0.06021	0.47776	6.14962
	A->Y (RF)	!B	0.03019	0.51557	7.70824
	B->Y (FF)	A	0.05322	0.47337	6.17260
	B->Y (RF)	!A	0.03790	0.52475	7.69447

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	0.00831	0.01417	0.16552
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02041	0.03178	0.24214
	B	A	0.00000	0.00000	0.00000
	B	A	0.00258	0.01064	0.20029
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02275	0.03292	0.22053

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	0.02564	0.03443	0.21489
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00540	0.01257	0.19548
	B	A	0.00000	0.00000	0.00000
	B	A	0.02337	0.03403	0.22190
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00729	0.01440	0.19545

SKY130_OSU_SC_18T_MS__XOR2

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	0.01072	0.00981	2.24310

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_ms__xor2_l	0.00000	0.35440	0.54891

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	0.06035	0.48553	6.48091
	A->Y (FR)	B	0.04228	0.68998	10.26450
	B->Y (RR)	!A	0.05257	0.48462	6.52183
	B->Y (FR)	A	0.04596	0.69066	10.21510

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	0.05287	0.46257	5.79194
	A->Y (RF)	B	0.02803	0.50736	7.49326
	B->Y (FF)	!A	0.04835	0.45787	5.94082
	B->Y (RF)	A	0.03568	0.50609	7.39064

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	0.02430	0.03554	0.23649
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00415	0.00995	0.19608
	B	A	0.00000	0.00000	0.00000
	B	A	0.02508	0.03629	0.23054
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00214	0.01012	0.20274

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	0.00441	0.01204	0.20868
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.02648	0.03678	0.19726
	B	A	0.00000	0.00000	0.00000
	B	A	0.00450	0.01179	0.19890
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02382	0.03512	0.22584

SKY130_OSU_SC_18T_MS_x

sky130_osu_sc_18T_ms_ff_1P95_-40C.ccs
Cell Library: Process , Voltage 1.95, Temp -40.00

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	1.37552
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	683004.00000	1366010.00000
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
	-0.00056	0.19169	2.66611

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
	11.88290	11.29970	3.18034