sky130_osu_sc_12T_ms_tt_1P80_100C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_MS__ADDFx
SKY130_OSU_SC_12T_MS__ADDHx
SKY130_OSU_SC_12T_MS__AND2x
SKY130_OSU_SC_12T_MS__AOI21
SKY130_OSU_SC_12T_MS__AOI22
SKY130_OSU_SC_12T_MS__BUFx
SKY130_OSU_SC_12T_MS__DFFNRx
SKY130_OSU_SC_12T_MS__DFFRx
SKY130_OSU_SC_12T_MS__DFFSRx
SKY130_OSU_SC_12T_MS__DFFSx
SKY130_OSU_SC_12T_MS__DFFx
SKY130_OSU_SC_12T_MS__INVx
SKY130_OSU_SC_12T_MS__MUX2
SKY130_OSU_SC_12T_MS__NAND2x
SKY130_OSU_SC_12T_MS__NOR2x
SKY130_OSU_SC_12T_MS__OAI21
SKY130_OSU_SC_12T_MS__OAI22
SKY130_OSU_SC_12T_MS__OR2x
SKY130_OSU_SC_12T_MS__TBUFIx
SKY130_OSU_SC_12T_MS__TNBUFIx
SKY130_OSU_SC_12T_MS__XNOR2
SKY130_OSU_SC_12T_MS__XOR2
SKY130_OSU_SC_12T_MS_x

SKY130_OSU_SC_12T_MS__ADDFx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__addf_1	31.25760
sky130_osu_sc_12T_ms__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_ms__addf_1	0.01137	0.01138	0.00871	1.41906	0.61978	1.24715
sky130_osu_sc_12T_ms__addf_l	0.01137	0.01138	0.00873	0.95447	0.62072	1.24653

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addf_1	0.00000	9.87640	11.91500
sky130_osu_sc_12T_ms__addf_l	0.00000	16.93990	26.05290

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.14718	1.66802	25.41060
	B->CO (RR)	0.14653	1.65189	25.10300
	CI->CO (RR)	0.13797	1.70397	26.12030
	CON->CO (FR)	0.02218	0.65481	10.44360
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.14638	1.51953	20.00700
	B->CO (RR)	0.14583	1.51471	20.03410
	CI->CO (RR)	0.13711	1.55606	20.74880
	CON->CO (FR)	0.02595	0.69934	10.07960

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.19364	2.05172	31.04510
	B->CO (FF)	0.17251	1.96318	29.81160
	CI->CO (FF)	0.17106	2.06092	31.60350
	CON->CO (RF)	0.02188	0.59072	9.39626
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.18916	1.81442	23.63000
	B->CO (FF)	0.16898	1.74206	22.80840
	CI->CO (FF)	0.16658	1.82461	24.22080
	CON->CO (RF)	0.02429	0.60944	8.82876

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CON (FR)	0.14597	0.84742	9.29357
	B->CON (FR)	0.12491	0.80457	9.26436
	CI->CON (FR)	0.12340	0.85988	9.92010
sky130_osu_sc_12T_ms__addf_l	A->CON (FR)	0.13864	0.84073	9.29498
	B->CON (FR)	0.11841	0.79863	9.26726
	CI->CON (FR)	0.11606	0.85305	9.92276

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->CON (RF)	0.10165	0.61727	6.91840
	B->CON (RF)	0.10151	0.64074	7.42030
	CI->CON (RF)	0.09245	0.65541	7.72379
sky130_osu_sc_12T_ms__addf_l	A->CON (RF)	0.09813	0.61408	6.92169
	B->CON (RF)	0.09811	0.63777	7.42342
	CI->CON (RF)	0.08889	0.65220	7.72702

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->S (-R)	0.28413	1.82206	23.42510
	B->S (-R)	0.29863	1.81266	22.66300
	CI->S (-R)	0.25966	1.82747	23.99450
	CON->S (RR)	0.07928	0.61835	7.20327
sky130_osu_sc_12T_ms__addf_l	A->S (-R)	0.27397	1.81337	23.40730
	B->S (-R)	0.28836	1.80481	22.64690
	CI->S (-R)	0.24952	1.81907	23.97450
	CON->S (RR)	0.07931	0.61821	7.19966

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addf_1	A->S (-F)	0.24793	1.48390	18.07340
	B->S (-F)	0.24278	1.43844	17.85880
	CI->S (-F)	0.23860	1.51664	18.80230
	CON->S (FF)	0.09834	0.61847	6.50149
sky130_osu_sc_12T_ms__addf_l	A->S (-F)	0.24168	1.47904	18.06080
	B->S (-F)	0.23670	1.43415	17.84960
	CI->S (-F)	0.23228	1.51259	18.79150
	CON->S (FF)	0.09839	0.61831	6.49805

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00281	0.00417	0.03171
	B	0.00404	0.00519	0.03024
	CI	0.00406	0.00555	0.03322
sky130_osu_sc_12T_ms__addf_l	A	0.00249	0.00354	0.02328
	B	0.00372	0.00459	0.02285
	CI	0.00374	0.00492	0.02464

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00961	0.01188	0.05704
	B	0.01005	0.01192	0.05208
	CI	0.00817	0.01055	0.05626
sky130_osu_sc_12T_ms__addf_l	A	0.00948	0.01105	0.04029
	B	0.00991	0.01120	0.03735
	CI	0.00804	0.00973	0.03983

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00952	0.01078	0.03274
	B	0.00998	0.01101	0.03067
	CI	0.00809	0.00951	0.03225
sky130_osu_sc_12T_ms__addf_l	A	0.00939	0.01053	0.03128
	B	0.00983	0.01077	0.02934
	CI	0.00796	0.00925	0.03082

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00273	0.00354	0.01819
	B	0.00395	0.00459	0.01905
	CI	0.00399	0.00490	0.02009
sky130_osu_sc_12T_ms__addf_l	A	0.00243	0.00323	0.01800
	B	0.00364	0.00429	0.01895
	CI	0.00368	0.00460	0.01998

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00957	0.01165	0.05142
	B	0.01002	0.01172	0.04718
	CI	0.00813	0.01034	0.05079
sky130_osu_sc_12T_ms__addf_l	A	0.00948	0.01137	0.04876
	B	0.00281	0.00179	0.03934
	CI	0.00803	0.01006	0.04811

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.02054	0.02118	0.05721
	B	0.01879	0.01950	0.05675
	CI	0.01587	0.01663	0.05021
sky130_osu_sc_12T_ms__addf_l	A	0.02055	0.02118	0.05721
	B	0.01914	0.01980	0.05705
	CI	0.01588	0.01663	0.05022

SKY130_OSU_SC_12T_MS__ADDHx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__addh_1	18.55920
sky130_osu_sc_12T_ms__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_ms__addh_1	0.00558	0.00589	1.35368	1.39689	1.41540
sky130_osu_sc_12T_ms__addh_l	0.00558	0.00589	0.95534	1.39551	0.97611

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addh_1	0.00000	11.38000	11.90040
sky130_osu_sc_12T_ms__addh_l	0.00000	25.49250	26.02580

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CO (RR)	0.09762	0.63106	7.24139
	B->CO (RR)	0.10094	0.61804	7.26333
sky130_osu_sc_12T_ms__addh_l	A->CO (RR)	0.09622	0.67759	7.22680
	B->CO (RR)	0.09962	0.66555	7.21684

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CO (FF)	0.07932	0.59068	6.78373
	B->CO (FF)	0.08397	0.60676	6.89328
sky130_osu_sc_12T_ms__addh_l	A->CO (FF)	0.07855	0.61730	6.52544
	B->CO (FF)	0.08306	0.63493	6.64909

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CON (RR)	0.13543	0.65087	7.24895
	B->CON (RR)	0.13794	0.63650	7.27765
sky130_osu_sc_12T_ms__addh_l	A->CON (RR)	0.12553	0.63814	7.23993
	B->CON (RR)	0.12815	0.62265	7.24176

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->CON (FF)	0.11163	0.61806	6.95404
	B->CON (FF)	0.10896	0.62718	7.03962
sky130_osu_sc_12T_ms__addh_l	A->CON (FF)	0.10377	0.59735	6.82588
	B->CON (FF)	0.10116	0.60748	6.91373

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->S (FR)	0.15044	1.29010	17.59460
	B->S (FR)	0.14730	1.29968	17.74680
	CON->S (FR)	0.02367	0.66331	10.58070
sky130_osu_sc_12T_ms__addh_l	A->S (FR)	0.14427	1.20128	14.23110
	B->S (FR)	0.14127	1.21138	14.33860
	CON->S (FR)	0.02661	0.70735	10.26790

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__addh_1	A->S (RF)	0.17240	1.30403	17.61010
	B->S (RF)	0.17492	1.28897	17.63850
	CON->S (RF)	0.02150	0.58966	9.41448
sky130_osu_sc_12T_ms__addh_l	A->S (RF)	0.16426	1.19504	13.94120
	B->S (RF)	0.16684	1.18226	13.93680
	CON->S (RF)	0.02378	0.61698	8.98575

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00483	0.00529	0.02108
	B	0.00000	0.00000	0.00000
	B	0.00437	0.00471	0.02369
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00439	0.00478	0.02073
	B	0.00000	0.00000	0.00000
	B	0.00393	0.00419	0.02225

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00671	0.00730	0.02630
	B	0.00000	0.00000	0.00000
	B	0.00704	0.00796	0.02815
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00624	0.00680	0.02551
	B	0.00000	0.00000	0.00000
	B	0.00657	0.00741	0.02689

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00483	0.00529	0.02111
	B	0.00000	0.00000	0.00000
	B	0.00437	0.00471	0.02370
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00439	0.00496	0.02090
	B	0.00000	0.00000	0.00000
	B	0.00392	0.00420	0.02259

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00671	0.00730	0.02650
	B	0.00000	0.00000	0.00000
	B	0.00705	0.00796	0.02826
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00625	0.00682	0.02611
	B	0.00000	0.00000	0.00000
	B	0.00658	0.00745	0.02759

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00675	0.00734	0.02647
	B	0.00000	0.00000	0.00000
	B	0.00709	0.00801	0.02834
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00632	0.00688	0.02588
	B	0.00000	0.00000	0.00000
	B	0.00666	0.00750	0.02714

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	A	0.00000	0.00000	0.00000
	A	0.00485	0.00532	0.02133
	B	0.00000	0.00000	0.00000
	B	0.00439	0.00474	0.02372
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00439	0.00480	0.02089
	B	0.00000	0.00000	0.00000
	B	0.00394	0.00420	0.02259

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.59470	1.52911	0.54835
sky130_osu_sc_12T_ms__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.59493	1.52936	0.54860

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.59470	1.53076	0.58957
sky130_osu_sc_12T_ms__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.59493	1.53095	0.58982

SKY130_OSU_SC_12T_MS__AND2x

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__and2_1	8.30280
sky130_osu_sc_12T_ms__and2_2	10.25640
sky130_osu_sc_12T_ms__and2_4	14.16360
sky130_osu_sc_12T_ms__and2_6	18.07080
sky130_osu_sc_12T_ms__and2_8	21.97800
sky130_osu_sc_12T_ms__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__and2_1	0.00298	0.00310	1.36231
sky130_osu_sc_12T_ms__and2_2	0.00299	0.00310	2.67730
sky130_osu_sc_12T_ms__and2_4	0.00298	0.00310	5.18300
sky130_osu_sc_12T_ms__and2_6	0.00302	0.00310	7.62134
sky130_osu_sc_12T_ms__and2_8	0.00299	0.00311	10.02899
sky130_osu_sc_12T_ms__and2_l	0.00226	0.00234	0.95381

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__and2_1	0.00000	4.95668	7.92181
sky130_osu_sc_12T_ms__and2_2	0.00000	7.92183	7.94303
sky130_osu_sc_12T_ms__and2_4	0.00000	13.85680	15.82020
sky130_osu_sc_12T_ms__and2_6	0.00000	19.79170	23.71840
sky130_osu_sc_12T_ms__and2_8	0.00000	25.72660	31.61650
sky130_osu_sc_12T_ms__and2_l	0.00000	22.62100	36.18440

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__and2_1	A->Y (RR)	0.07426	0.57566	7.20831
	B->Y (RR)	0.07936	0.56645	6.96652
sky130_osu_sc_12T_ms__and2_2	A->Y (RR)	0.08424	0.51983	7.20077
	B->Y (RR)	0.08937	0.50650	6.96083
sky130_osu_sc_12T_ms__and2_4	A->Y (RR)	0.11567	0.53106	7.37953
	B->Y (RR)	0.12082	0.50962	7.14181
sky130_osu_sc_12T_ms__and2_6	A->Y (RR)	0.14855	0.56631	7.50559
	B->Y (RR)	0.15355	0.53956	7.26925
sky130_osu_sc_12T_ms__and2_8	A->Y (RR)	0.18051	0.60494	7.69508
	B->Y (RR)	0.18570	0.57554	7.44786
sky130_osu_sc_12T_ms__and2_l	A->Y (RR)	0.07767	0.63316	7.31268
	B->Y (RR)	0.08269	0.62040	7.03664

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__and2_1	A->Y (FF)	0.06388	0.52778	6.27502
	B->Y (FF)	0.06528	0.53772	6.34876
sky130_osu_sc_12T_ms__and2_2	A->Y (FF)	0.07186	0.48699	6.33579
	B->Y (FF)	0.07310	0.49380	6.40063
sky130_osu_sc_12T_ms__and2_4	A->Y (FF)	0.09979	0.50494	6.51554
	B->Y (FF)	0.09901	0.50547	6.59207
sky130_osu_sc_12T_ms__and2_6	A->Y (FF)	0.13000	0.54184	6.66391
	B->Y (FF)	0.12706	0.53848	6.72089
sky130_osu_sc_12T_ms__and2_8	A->Y (FF)	0.15867	0.57706	6.77692
	B->Y (FF)	0.15387	0.57036	6.82655
sky130_osu_sc_12T_ms__and2_l	A->Y (FF)	0.06424	0.54862	5.98947
	B->Y (FF)	0.06875	0.56508	6.09684

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00337	0.00503	0.05810
	B	0.00000	0.00000	0.00000
	B	0.00341	0.00434	0.04387
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.00644	0.00798	0.06074
	B	0.00000	0.00000	0.00000
	B	0.00649	0.00744	0.04631
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01392	0.01522	0.06608
	B	0.00000	0.00000	0.00000
	B	0.01397	0.01469	0.05281
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.02286	0.02270	0.07202
	B	0.00000	0.00000	0.00000
	B	0.02292	0.02209	0.05853
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.03295	0.03071	0.08179
	B	0.00000	0.00000	0.00000
	B	0.03324	0.02978	0.06767
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00340	0.00521	0.05877
	B	0.00000	0.00000	0.00000
	B	0.00344	0.00462	0.04905

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	A	0.00000	0.00000	0.00000
	A	0.00826	0.01078	0.05858
	B	0.00000	0.00000	0.00000
	B	0.00935	0.01162	0.05788
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01061	0.01326	0.06089
	B	0.00000	0.00000	0.00000
	B	0.01172	0.01400	0.06042
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.01722	0.01947	0.06666
	B	0.00000	0.00000	0.00000
	B	0.01819	0.02013	0.06621
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.02502	0.02601	0.07286
	B	0.00000	0.00000	0.00000
	B	0.02572	0.02660	0.07252
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.03429	0.03268	0.07915
	B	0.00000	0.00000	0.00000
	B	0.03454	0.03299	0.07832
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.00652	0.00928	0.05934
	B	0.00000	0.00000	0.00000
	B	0.00729	0.00988	0.05912

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00283	-0.00286	-0.00286
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00280	-0.00282	-0.00283
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00273	-0.00275	-0.00276
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00269	-0.00271	-0.00272
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00259	-0.00261	-0.00262
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00184	-0.00187	-0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00293	0.00296	0.00294
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00296	0.00300	0.00298
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00303	0.00306	0.00304
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00313	0.00316	0.00314
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00317	0.00320	0.00318
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00218	0.00221	0.00219

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00271	-0.00271	-0.00271
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00267	-0.00268	-0.00267
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00261	-0.00262	-0.00261
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00254	-0.00255	-0.00254
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00247	-0.00248	-0.00247
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00177	-0.00179	-0.00177

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00287	0.00280	0.00278
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00289	0.00284	0.00282
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00296	0.00291	0.00289
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00303	0.00298	0.00296
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00310	0.00305	0.00303
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00215	0.00210	0.00209

SKY130_OSU_SC_12T_MS__AOI21

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ms__aoi21_l	0.00275	0.00292	0.00287	0.57500

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi21_l	0.00000	2.11735	4.55070

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi21_l	A0->Y (FR)	0.07585	0.77728	9.00045
	A1->Y (FR)	0.06025	0.71193	8.47836
	B0->Y (FR)	0.05710	0.80175	9.77253

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi21_l	A0->Y (RF)	0.05287	0.54407	6.42288
	A1->Y (RF)	0.04892	0.57400	7.04773
	B0->Y (RF)	0.02911	0.51599	6.57367

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00710	0.00723	0.01859
	A1	0.00000	0.00000	0.00000
	A1	0.00598	0.00611	0.01722
	B0	0.00430	0.00500	0.02046

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00169	0.00171	0.01055
	A1	0.00000	0.00000	0.00000
	A1	0.00174	0.00196	0.01186
	B0	-0.00053	0.00014	0.01018

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00182	-0.00231	-0.00236
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00238	-0.00239	-0.00238
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00241	-0.00243	-0.00241

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00241	0.00244	0.00244
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00244	0.00246	0.00245
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00251	0.00244	0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00181	-0.00232	-0.00236
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00238	-0.00239	-0.00238
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00264	-0.00265	-0.00266

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00243	0.00245	0.00244
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00244	0.00248	0.00246
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00266	0.00271	0.00267

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00102	-0.00103	-0.00102

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00116	0.00117	0.00107

SKY130_OSU_SC_12T_MS__AOI22

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__aoi22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__aoi22_1	0.00275	0.00292	0.00305	0.00286	0.56008

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi22_1	0.00000	2.39583	7.89639

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi22_l	A0->Y (FR)	0.09680	0.79663	8.90389
	A1->Y (FR)	0.08615	0.78132	8.85222
	B0->Y (FR)	0.06022	0.79705	9.62129
	B1->Y (FR)	0.07127	0.81355	9.69075

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__aoi22_l	A0->Y (RF)	0.06969	0.55687	6.33915
	A1->Y (RF)	0.06562	0.58628	6.96051
	B0->Y (RF)	0.03482	0.55369	6.92232
	B1->Y (RF)	0.03973	0.52232	6.30223

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.00870	0.00877	0.02049
	A1	0.00757	0.00762	0.01917
	B0	0.00468	0.00535	0.02104
	B1	0.00586	0.00646	0.02170

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.00331	0.00332	0.01263
	A1	0.00334	0.00363	0.01383
	B0	-0.00026	0.00017	0.01034
	B1	-0.00019	0.00003	0.00908

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00169	-0.00227	-0.00232
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00234	-0.00236	-0.00234
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00241	-0.00242	-0.00241
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00241	-0.00242	-0.00241

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00246	0.00246	0.00248
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00248	0.00250	0.00249
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00251	0.00243	0.00242
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00251	0.00244	0.00242

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00168	-0.00228	-0.00233
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00235	-0.00235	-0.00235
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00263	-0.00264	-0.00265
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00263	-0.00264	-0.00265

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00246	0.00248	0.00248
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00249	0.00252	0.00249
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00265	0.00268	0.00266
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00265	0.00268	0.00266

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00101	-0.00103	-0.00102
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00094	-0.00096	-0.00097
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00275	-0.00276	-0.00277
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00274	-0.00276	-0.00277

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00121	0.00122	0.00108
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00104	0.00104	0.00105
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00276	0.00278	0.00278
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00276	0.00278	0.00278

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00103	-0.00104	-0.00103
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00096	-0.00097	-0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00254	-0.00255	-0.00254
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00254	-0.00255	-0.00254

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00123	0.00123	0.00109
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00105	0.00106	0.00106
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00262	0.00256	0.00254
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00262	0.00256	0.00254

SKY130_OSU_SC_12T_MS__BUFx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__buf_1	6.34920
sky130_osu_sc_12T_ms__buf_2	8.30280
sky130_osu_sc_12T_ms__buf_4	12.21000
sky130_osu_sc_12T_ms__buf_6	16.11720
sky130_osu_sc_12T_ms__buf_8	20.02440
sky130_osu_sc_12T_ms__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ms__buf_1	0.00311	1.27068
sky130_osu_sc_12T_ms__buf_2	0.00311	2.61678
sky130_osu_sc_12T_ms__buf_4	0.00310	5.12870
sky130_osu_sc_12T_ms__buf_6	0.00083	1.80000
sky130_osu_sc_12T_ms__buf_8	0.00311	10.12051
sky130_osu_sc_12T_ms__buf_l	0.00230	0.96921

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__buf_1	0.00000	3.97559	3.97564
sky130_osu_sc_12T_ms__buf_2	0.00000	5.95946	7.92216
sky130_osu_sc_12T_ms__buf_4	0.00000	9.93113	15.82060
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ms__buf_8	0.00000	17.87450	31.61730
sky130_osu_sc_12T_ms__buf_l	0.00000	18.10290	18.10340

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__buf_1	A->Y (RR)	0.05625	0.54511	6.76147
sky130_osu_sc_12T_ms__buf_2	A->Y (RR)	0.06055	0.47346	6.78116
sky130_osu_sc_12T_ms__buf_4	A->Y (RR)	0.08091	0.46548	6.91001
sky130_osu_sc_12T_ms__buf_8	A->Y (RR)	0.12211	0.51284	7.25488
sky130_osu_sc_12T_ms__buf_l	A->Y (RR)	0.05859	0.59363	6.97058

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__buf_1	A->Y (FF)	0.05972	0.50697	5.99780
sky130_osu_sc_12T_ms__buf_2	A->Y (FF)	0.06802	0.47829	6.31548
sky130_osu_sc_12T_ms__buf_4	A->Y (FF)	0.09572	0.49840	6.56530
sky130_osu_sc_12T_ms__buf_8	A->Y (FF)	0.15373	0.57209	6.91982
sky130_osu_sc_12T_ms__buf_l	A->Y (FF)	0.06211	0.55268	6.22930

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00311	0.00462	0.04268
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00601	0.00764	0.04805
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01291	0.01473	0.05278
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.02881	0.03029	0.06699
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00280	0.00470	0.05424

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__buf_1	A	0.00000	0.00000	0.00000
	A	0.00792	0.01029	0.05805
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01024	0.01262	0.06021
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01674	0.01866	0.06563
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.03346	0.03173	0.07690
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.00640	0.00928	0.06254

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
	-0.00069	-0.00069	-0.00065

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
	0.00069	0.00069	0.00065

SKY130_OSU_SC_12T_MS__DFFNRx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffnr_1	42.49080
sky130_osu_sc_12T_ms__dffnr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ms__dffnr_1	0.00287	0.00285	0.00913	1.37059	1.35544
sky130_osu_sc_12T_ms__dffnr_l	0.00287	0.00285	0.00913	0.96799	0.96126

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffnr_1	0.00000	22.15300	38.50300
sky130_osu_sc_12T_ms__dffnr_l	0.00000	36.28050	52.63080

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->Q (FR)	0.34335	1.45621	16.68470
	QN->Q (FR)	0.02576	0.73018	11.55860
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FR)	0.33879	1.54229	16.08530
	QN->Q (FR)	0.02803	0.75478	10.91580

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->Q (FF)	0.22376	1.33541	17.20340
	QN->Q (RF)	0.02358	0.63214	9.98258
	RN->Q (FF)	0.21346	1.34875	17.27750
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FF)	0.22595	1.45548	16.85860
	QN->Q (RF)	0.02542	0.65221	9.46082
	RN->Q (FF)	0.21577	1.46866	16.93630

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	CK->QN (FR)	0.19122	0.71591	7.38566
	RN->QN (FR)	0.18077	0.72892	7.45837
sky130_osu_sc_12T_ms__dffnr_l	CK->QN (FR)	0.18952	0.76854	7.38108
	RN->QN (FR)	0.17922	0.78194	7.45273

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffnr_1	**CK->QN (FF)**	0.30623	0.81915	6.61285
sky130_osu_sc_12T_ms__dffnr_l	**CK->QN (FF)**	0.29894	0.84254	6.43017

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.10886	-0.22032	-1.78849
	setup	CK (F)	0.16585	0.23416	1.83555
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.10803	-0.22033	-1.78887
	setup	CK (F)	0.16592	0.23416	1.83555

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.06904	-0.07570	-0.01998
	setup	CK (F)	0.16975	0.20439	0.37805
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.06792	-0.07329	-0.02029
	setup	CK (F)	0.16620	0.20410	0.38350

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.10886	-0.22032	-1.78849
	setup	CK (F)	0.16585	0.23416	1.83555
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.10803	-0.22033	-1.78887
	setup	CK (F)	0.16592	0.23416	1.83555

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	hold	CK (F)	-0.06904	-0.07570	-0.01998
	setup	CK (F)	0.16975	0.20439	0.37805
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.06792	-0.07329	-0.02029
	setup	CK (F)	0.16620	0.20410	0.38350

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	recovery	CK (F)	0.13107	0.13547	-0.19971
	removal	CK (F)	-0.09714	-0.12073	0.22889
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.13138	0.13547	-0.19719
	removal	CK (F)	-0.09714	-0.12073	0.22889

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	recovery	CK (F)	0.13107	0.13547	-0.19971
	removal	CK (F)	-0.09714	-0.12073	0.22889
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.13138	0.13547	-0.19719
	removal	CK (F)	-0.09714	-0.12073	0.22889

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	min_pulse_width	RN ()	0.12814	0.42969	13.33370
	min_pulse_width	RN ()	0.12814	0.42969	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	RN ()	0.12489	0.42969	13.33370
	min_pulse_width	RN ()	0.12489	0.42969	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_12T_ms__dffnr_1	min_pulse_width	CK ()	0.15732	0.42969	13.33370
	min_pulse_width	CK ()	0.20920	0.42969	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.15732	0.42969	13.33370
	min_pulse_width	CK ()	0.20920	0.42969	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_12T_ms__dffnr_1	min_pulse_width	CK ()	0.15408	0.42969	13.33370
	min_pulse_width	CK ()	0.10868	0.42969	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.15083	0.42969	13.33370
	min_pulse_width	CK ()	0.10544	0.42969	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01584	0.01590	0.02915
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01521	0.01575	0.03906

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01591	0.01660	0.04355
	RN	-0.00102	-0.06771	-1.11017
	RN	0.02049	0.02021	0.03053
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01526	0.01655	0.05529
	RN	-0.00102	-0.05496	-0.78406
	RN	0.01985	0.02016	0.04217

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01582	0.01654	0.04356
	RN	-0.00102	-0.06726	-1.09782
	RN	0.02047	0.02020	0.03087
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01517	0.01646	0.05484
	RN	-0.00102	-0.05473	-0.77859
	RN	0.01981	0.02012	0.04222

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	CK	0.00000	0.00000	0.00000
	CK	0.01574	0.01581	0.02897
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.01503	0.01557	0.03904

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01036	0.01098	0.05369
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00361	0.00433	0.04576
	!CK	0.00000	0.00000	0.00000
	!CK	-0.00197	-0.00244	-0.00249
sky130_osu_sc_12T_ms__dffnr_l	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01048	0.01111	0.05381
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00374	0.00445	0.04590
	!CK	0.00000	0.00000	0.00000
	!CK	-0.00185	-0.00232	-0.00237

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01627	0.01717	0.06062
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00882	0.00974	0.05170
	!CK	0.00000	0.00000	0.00000
	!CK	0.00280	0.00282	0.00281
sky130_osu_sc_12T_ms__dffnr_l	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (CK * RN * !Q * QN)	0.01639	0.01729	0.06074
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00894	0.00987	0.05182
	!CK	0.00000	0.00000	0.00000
	!CK	0.00292	0.00294	0.00293

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01025	0.01180	0.07357
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00338	0.00498	0.06365
sky130_osu_sc_12T_ms__dffnr_l	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01037	0.01193	0.07369
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00351	0.00511	0.06377

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01600	0.01805	0.07935
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00826	0.01056	0.06954
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.01612	0.01817	0.07947
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00839	0.01069	0.06966

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00032	0.00097	0.06031
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01094	0.01359	0.09937
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00306	0.00591	0.11294
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01344	0.01440	0.09862
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00005	0.00133	0.06035
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00020	0.00110	0.06043
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01107	0.01371	0.09950
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00319	0.00603	0.11306
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01356	0.01452	0.09874
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00007	0.00145	0.06047

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffnr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01241	0.01467	0.07438
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01647	0.02059	0.12814
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01379	0.01587	0.07510
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01253	0.01479	0.07450
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01659	0.02072	0.12826
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01391	0.01599	0.07522

SKY130_OSU_SC_12T_MS__DFFRx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffr_1	42.49080
sky130_osu_sc_12T_ms__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_ms__dffr_1	0.00287	0.00285	0.00881	1.35708	1.35526
sky130_osu_sc_12T_ms__dffr_l	0.00287	0.00285	0.00880	0.96501	0.96056

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffr_1	0.00000	22.15300	38.52140
sky130_osu_sc_12T_ms__dffr_l	0.00000	36.28050	52.64910

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->Q (RR)	0.27775	1.33473	15.90800
	QN->Q (FR)	0.02576	0.72750	11.48520
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RR)	0.27300	1.42410	15.41350
	QN->Q (FR)	0.02803	0.75387	10.89410

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->Q (RF)	0.28840	1.37287	16.62550
	QN->Q (RF)	0.02358	0.62994	9.92378
	RN->Q (FF)	0.21371	1.34376	17.11810
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RF)	0.29045	1.49710	16.39930
	QN->Q (RF)	0.02542	0.65148	9.44313
	RN->Q (FF)	0.21603	1.46792	16.88810

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	CK->QN (RR)	0.25579	0.75865	6.96774
	RN->QN (FR)	0.18097	0.72954	7.45879
sky130_osu_sc_12T_ms__dffr_l	CK->QN (RR)	0.25403	0.81215	6.96731
	RN->QN (FR)	0.17945	0.78238	7.44957

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffr_1	**CK->QN (RF)**	0.24058	0.70320	5.99171
sky130_osu_sc_12T_ms__dffr_l	**CK->QN (RF)**	0.23309	0.72645	5.79809

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.06457	-0.06927	0.04256
	setup	CK (R)	0.21245	0.23689	0.70763
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.06657	-0.06927	0.04211
	setup	CK (R)	0.21402	0.23631	0.72159

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.11276	-0.25598	-2.66417
	setup	CK (R)	0.13528	0.26915	2.75548
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.11119	-0.25902	-2.66264
	setup	CK (R)	0.13529	0.26914	2.75548

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.06457	-0.06927	0.04256
	setup	CK (R)	0.21245	0.23689	0.70763
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.06657	-0.06927	0.04211
	setup	CK (R)	0.21402	0.23631	0.72159

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	hold	CK (R)	-0.11276	-0.25598	-2.66417
	setup	CK (R)	0.13528	0.26915	2.75548
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.11119	-0.25902	-2.66264
	setup	CK (R)	0.13529	0.26914	2.75548

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	recovery	CK (R)	0.17719	0.20780	1.01231
	removal	CK (R)	-0.03672	-0.04598	-0.07576
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.17818	0.20800	1.02209
	removal	CK (R)	-0.03672	-0.04598	-0.07576

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	recovery	CK (R)	0.17719	0.20780	1.01231
	removal	CK (R)	-0.03672	-0.04598	-0.07576
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.17818	0.20800	1.02209
	removal	CK (R)	-0.03672	-0.04598	-0.07576

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffr_1	min_pulse_width	RN ()	0.12814	0.42969	13.33370
	min_pulse_width	RN ()	0.12814	0.42969	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	RN ()	0.12489	0.42969	13.33370
	min_pulse_width	RN ()	0.12489	0.42969	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_12T_ms__dffr_1	min_pulse_width	CK ()	0.13138	0.42969	13.33370
	min_pulse_width	CK ()	0.15083	0.42969	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.12489	0.42969	13.33370
	min_pulse_width	CK ()	0.14759	0.42969	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_12T_ms__dffr_1	min_pulse_width	CK ()	0.27405	0.42969	13.33370
	min_pulse_width	CK ()	0.11192	0.42969	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.27405	0.42969	13.33370
	min_pulse_width	CK ()	0.11192	0.42969	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00858	0.00897	0.03509
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00795	0.00881	0.04534

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00999	0.00934	0.01921
	RN	-0.00102	-0.06731	-1.09923
	RN	0.02139	0.02111	0.03174
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00934	0.00927	0.03076
	RN	-0.00102	-0.05486	-0.78164
	RN	0.02074	0.02105	0.04305

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00990	0.00926	0.01902
	RN	-0.00102	-0.06725	-1.09767
	RN	0.02136	0.02107	0.03172
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00924	0.00918	0.03043
	RN	-0.00102	-0.05470	-0.77802
	RN	0.02070	0.02101	0.04306

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00847	0.00887	0.03480
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00775	0.00864	0.04429

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00170	-0.00217	-0.00223
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01062	0.01122	0.05392
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00439	0.00509	0.04650
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00157	-0.00205	-0.00210
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01075	0.01134	0.05404
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00452	0.00521	0.04662

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00260	0.00262	0.00261
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01596	0.01687	0.06033
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00797	0.00889	0.05088
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00272	0.00274	0.00273
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01609	0.01699	0.06045
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00810	0.00902	0.05100

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00338	0.00498	0.06365
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00974	0.01129	0.07305
sky130_osu_sc_12T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00351	0.00511	0.06378
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00986	0.01142	0.07317

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00826	0.01056	0.06954
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01645	0.01849	0.07979
sky130_osu_sc_12T_ms__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00838	0.01068	0.06966
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01657	0.01861	0.07992

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00052	0.00083	0.06029
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00542	0.00648	0.06880
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00035	0.00108	0.06025
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00040	0.00095	0.06041
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00554	0.00660	0.06895
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00023	0.00120	0.06038

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01220	0.01461	0.07433
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02577	0.02761	0.10076
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01931	0.02126	0.08292
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02488	0.02923	0.12591
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01371	0.01599	0.07515
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01232	0.01473	0.07446
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02589	0.02773	0.10089
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01943	0.02138	0.08304
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02501	0.02935	0.12607
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01383	0.01612	0.07528

SKY130_OSU_SC_12T_MS__DFFSRx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffsr_1	46.39800
sky130_osu_sc_12T_ms__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_ms__dffsr_1	0.00283	0.00286	0.00665	0.00889	1.41336	1.42028
sky130_osu_sc_12T_ms__dffsr_l	0.00283	0.00286	0.00665	0.00889	0.95165	0.96203

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffsr_1	0.00000	15.31360	21.04690
sky130_osu_sc_12T_ms__dffsr_l	0.00000	29.44100	35.17460

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->Q (RR)	0.29727	1.36893	16.33780
	QN->Q (FR)	0.02421	0.70205	11.20110
	RN->Q (RR)	0.24017	1.32399	16.38240
	SN->Q (FR)	0.21546	1.32594	16.88850
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RR)	0.29682	1.44745	15.25730
	QN->Q (FR)	0.02797	0.74943	10.79260
	RN->Q (RR)	0.24001	1.40288	15.30150
	SN->Q (FR)	0.21526	1.40211	15.80250

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->Q (RF)	0.33861	1.43592	17.01750
	QN->Q (RF)	0.02340	0.63863	10.16840
	RN->Q (FF)	0.22376	1.36721	17.50490
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RF)	0.34216	1.54558	16.24130
	QN->Q (RF)	0.02528	0.64746	9.35677
	RN->Q (FF)	0.22809	1.47747	16.71280

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->QN (RR)	0.30525	0.81343	7.09156
	RN->QN (FR)	0.19098	0.74520	7.56645
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RR)	0.30485	0.87106	7.04335
	RN->QN (FR)	0.19117	0.80338	7.50985

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffsr_1	CK->QN (RF)	0.26148	0.74040	6.30151
	RN->QN (RF)	0.20465	0.69625	6.34876
	SN->QN (FF)	0.18006	0.69797	6.85686
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RF)	0.25734	0.75849	5.85700
	RN->QN (RF)	0.20081	0.71478	5.90066
	SN->QN (FF)	0.17616	0.71391	6.40194

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.07392	-0.08349	-0.00121
	setup	CK (R)	0.22700	0.24389	0.73942
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.07491	-0.08258	-0.00239
	setup	CK (R)	0.22687	0.24391	0.73895

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.12849	-0.27823	-2.72786
	setup	CK (R)	0.16265	0.28940	2.80940
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.12948	-0.27757	-2.72855
	setup	CK (R)	0.16065	0.28940	2.80936

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.07392	-0.08349	-0.00121
	setup	CK (R)	0.22700	0.24389	0.73942
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.07491	-0.08258	-0.00239
	setup	CK (R)	0.22687	0.24391	0.73895

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	hold	CK (R)	-0.12849	-0.27823	-2.72786
	setup	CK (R)	0.16265	0.28940	2.80940
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.12948	-0.27757	-2.72855
	setup	CK (R)	0.16065	0.28940	2.80936

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.16995	0.19451	0.99468
	removal	CK (R)	-0.02683	-0.03288	-0.05784
	hold	SN (R)	-0.17019	-0.30018	-1.16089
	setup	SN (R)	0.19922	0.33501	3.87736
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.16972	0.19478	0.99509
	removal	CK (R)	-0.02683	-0.03288	-0.05784
	hold	SN (R)	-0.16655	-0.29195	-1.13012
	setup	SN (R)	0.20042	0.32776	3.79046

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.16995	0.19451	0.99468
	removal	CK (R)	-0.02683	-0.03288	-0.05784
	hold	SN (R)	-0.17019	-0.30018	-1.16089
	hold	SN (R)	-0.17221	-0.30193	-1.16862
	setup	SN (R)	0.19922	0.33370	3.62521
	setup	SN (R)	0.19871	0.33501	3.87736
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.16972	0.19478	0.99509
	removal	CK (R)	-0.02683	-0.03288	-0.05784
	hold	SN (R)	-0.16655	-0.29195	-1.13012
	hold	SN (R)	-0.16828	-0.29226	-1.13205
	setup	SN (R)	0.20042	0.32480	3.52066
	setup	SN (R)	0.18928	0.32776	3.79046

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	min_pulse_width	RN ()	0.14759	0.42969	13.33370
	min_pulse_width	RN ()	0.15083	0.42969	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	RN ()	0.14759	0.42969	13.33370
	min_pulse_width	RN ()	0.14759	0.42969	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.04512	0.07337	3.67434
	removal	CK (R)	-0.02032	-0.05660	-0.30593
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.04516	0.07283	3.52675
	removal	CK (R)	-0.02032	-0.05660	-0.30593

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	recovery	CK (R)	0.04512	0.07337	3.67434
	removal	CK (R)	-0.02032	-0.05660	-0.30593
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.04516	0.07283	3.52675
	removal	CK (R)	-0.02032	-0.05660	-0.30593

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	min_pulse_width	SN ()	0.17029	0.42969	13.33370
	min_pulse_width	SN ()	0.17677	0.42969	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	SN ()	0.17029	0.42969	13.33370
	min_pulse_width	SN ()	0.16705	0.42969	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_12T_ms__dffsr_1	min_pulse_width	CK ()	0.13786	0.42969	13.33370
	min_pulse_width	CK ()	0.17029	0.42969	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.13138	0.42969	13.33370
	min_pulse_width	CK ()	0.16705	0.42969	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_12T_ms__dffsr_1	min_pulse_width	CK ()	0.28702	0.42969	13.33370
	min_pulse_width	CK ()	0.14111	0.42969	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.28702	0.42969	13.33370
	min_pulse_width	CK ()	0.14111	0.42969	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01065	0.01088	0.03584
	RN	0.01893	0.01867	0.03283
	SN	-0.00102	-0.06897	-1.14481
	SN	0.01828	0.01753	0.03496
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01006	0.01080	0.04671
	RN	0.01833	0.01856	0.04374
	SN	-0.00102	-0.05440	-0.77082
	SN	0.01770	0.01749	0.04553

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01130	0.01112	0.02803
	RN	-0.00102	-0.06897	-1.14481
	RN	0.02267	0.02277	0.03978
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01066	0.01066	0.03240
	RN	-0.00102	-0.05440	-0.77082
	RN	0.02202	0.02231	0.04508

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01124	0.01105	0.02671
	RN	-0.00102	-0.06917	-1.15027
	RN	0.02263	0.02273	0.03959
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01060	0.01058	0.03199
	RN	-0.00102	-0.05475	-0.77921
	RN	0.02146	0.02178	0.04470

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01053	0.01077	0.03507
	RN	0.01881	0.01856	0.03255
	SN	-0.00102	-0.06917	-1.15035
	SN	0.01820	0.01746	0.03482
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00986	0.01061	0.04578
	RN	0.01812	0.01837	0.04317
	SN	-0.00102	-0.05475	-0.77920
	SN	0.01754	0.01732	0.04540

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00223	-0.00225	-0.00225
	(!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)	0.01329	0.01387	0.05591
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00471	0.00536	0.04658
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00469	0.00535	0.04660
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00473	0.00541	0.04662
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00211	-0.00213	-0.00213
	(!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)	0.01341	0.01399	0.05603
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00484	0.00549	0.04670
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00481	0.00547	0.04673
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00486	0.00553	0.04674

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00268	0.00263	0.00261
	(!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)	0.01843	0.01922	0.06195
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00855	0.00945	0.05123
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00876	0.00960	0.05126
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00853	0.00944	0.05121
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00281	0.00275	0.00273
	(!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)	0.01856	0.01935	0.06207
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00867	0.00958	0.05136
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00888	0.00973	0.05138
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00865	0.00956	0.05133

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00248	0.00403	0.06265
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01129	0.01268	0.07369
sky130_osu_sc_12T_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)	0.00260	0.00416	0.06277
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01141	0.01281	0.07382

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00880	0.01116	0.07027
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01715	0.01918	0.08024
sky130_osu_sc_12T_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)	0.00892	0.01129	0.07039
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01727	0.01930	0.08036

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	-0.00591	-0.00592	-0.00595
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00526	-0.00633	-0.00642
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00537	-0.00589	-0.00596
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00340	0.00409	0.04556
sky130_osu_sc_12T_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)	-0.00579	-0.00580	-0.00583
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00514	-0.00621	-0.00630
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00525	-0.00577	-0.00583
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00352	0.00423	0.04568

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_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)	0.00624	0.00637	0.00627
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00671	0.00670	0.00674
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00629	0.00631	0.00630
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01419	0.01456	0.05528
sky130_osu_sc_12T_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)	0.00637	0.00649	0.00639
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00684	0.00683	0.00687
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00641	0.00643	0.00643
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01431	0.01469	0.05540

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00059	0.00075	0.06018
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00636	0.00741	0.06953
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00614	0.00721	0.06942
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00038	0.00104	0.06020
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00308	0.00570	0.11275
sky130_osu_sc_12T_ms__dffsr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00047	0.00087	0.06031
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00648	0.00754	0.06965
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00626	0.00735	0.06954
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00025	0.00116	0.06032
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00320	0.00582	0.11287

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_ms__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02873	0.03054	0.10322
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01242	0.01480	0.07452
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01956	0.02160	0.08317
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01959	0.02168	0.08315
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02744	0.03144	0.12844
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01358	0.01583	0.07499
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01678	0.02102	0.12847
sky130_osu_sc_12T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.02885	0.03066	0.10335
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01255	0.01492	0.07464
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01968	0.02172	0.08330
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01972	0.02181	0.08328
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02756	0.03156	0.12857
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01371	0.01596	0.07511
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01691	0.02115	0.12859

SKY130_OSU_SC_12T_MS__DFFSx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dffs_1	38.58360
sky130_osu_sc_12T_ms__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_ms__dffs_1	0.00285	0.00541	0.00881	1.36718	1.35769
sky130_osu_sc_12T_ms__dffs_l	0.00285	0.00541	0.00881	0.95869	0.96539

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffs_1	0.00000	34.32170	80.33500
sky130_osu_sc_12T_ms__dffs_l	0.00000	48.44890	94.46280

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->Q (RR)	0.21640	1.26320	15.89770
	QN->Q (FR)	0.02572	0.72664	11.49380
	SN->Q (FR)	0.16109	1.27491	16.42370
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RR)	0.21631	1.35232	15.20840
	QN->Q (FR)	0.02798	0.74977	10.81620
	SN->Q (FR)	0.16126	1.35903	15.70670

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->Q (RF)	0.32207	1.41774	16.75890
	QN->Q (RF)	0.02349	0.62914	9.94169
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RF)	0.32188	1.52892	16.31510
	QN->Q (RF)	0.02535	0.64819	9.38721

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->QN (RR)	0.28824	0.80005	7.00430
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RR)	0.28425	0.85038	7.02610

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dffs_1	CK->QN (RF)	0.18242	0.63048	5.89105
	SN->QN (FF)	0.12696	0.64267	6.41546
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RF)	0.17931	0.66151	5.72691
	SN->QN (FF)	0.12408	0.66815	6.22959

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.05232	-0.06106	0.05185
	setup	CK (R)	0.15592	0.18408	0.76513
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.05020	-0.06204	0.05282
	setup	CK (R)	0.15583	0.18396	0.77730

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.11688	-0.26030	-2.60749
	setup	CK (R)	0.14632	0.27166	2.78283
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.11616	-0.26209	-2.58955
	setup	CK (R)	0.14621	0.27166	2.78283

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.05232	-0.06106	0.05185
	setup	CK (R)	0.15592	0.18408	0.76513
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.05020	-0.06204	0.05282
	setup	CK (R)	0.15583	0.18396	0.77730

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	hold	CK (R)	-0.11688	-0.26030	-2.60749
	setup	CK (R)	0.14632	0.27166	2.78283
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.11616	-0.26209	-2.58955
	setup	CK (R)	0.14621	0.27166	2.78283

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	recovery	CK (R)	0.04335	0.07059	2.39377
	removal	CK (R)	-0.02588	-0.05225	-0.38391
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.04595	0.06787	2.26131
	removal	CK (R)	-0.02588	-0.05225	-0.38391

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	recovery	CK (R)	0.04335	0.07059	2.39377
	removal	CK (R)	-0.02588	-0.05225	-0.38391
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.04595	0.06787	2.26131
	removal	CK (R)	-0.02588	-0.05225	-0.38391

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dffs_1	min_pulse_width	SN ()	0.10868	0.42969	13.33370
	min_pulse_width	SN ()	0.11192	0.42969	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	SN ()	0.10868	0.42969	13.33370
	min_pulse_width	SN ()	0.10544	0.42969	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_12T_ms__dffs_1	min_pulse_width	CK ()	0.09895	0.42969	13.33370
	min_pulse_width	CK ()	0.16056	0.42969	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.09247	0.42969	13.33370
	min_pulse_width	CK ()	0.15732	0.42969	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_12T_ms__dffs_1	min_pulse_width	CK ()	0.21893	0.42969	13.33370
	min_pulse_width	CK ()	0.12814	0.42969	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.21893	0.42969	13.33370
	min_pulse_width	CK ()	0.12814	0.42969	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00844	0.00893	0.03547
	SN	-0.00102	-0.06761	-1.10741
	SN	0.01481	0.01567	0.04767
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00781	0.00879	0.04542
	SN	-0.00102	-0.05464	-0.77652
	SN	0.01418	0.01554	0.05739

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01059	0.00999	0.02055
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00991	0.00988	0.03180

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01040	0.00982	0.02024
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00975	0.00973	0.03137

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00834	0.00888	0.03491
	SN	-0.00102	-0.06733	-1.09965
	SN	0.01475	0.01562	0.04739
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00764	0.00861	0.04435
	SN	-0.00102	-0.05487	-0.78192
	SN	0.01405	0.01541	0.05676

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00175	-0.00177	-0.00177
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01040	0.01116	0.05563
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00423	0.00492	0.04636
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00163	-0.00164	-0.00164
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01052	0.01128	0.05575
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00435	0.00504	0.04648

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00323	0.00316	0.00316
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01613	0.01694	0.06019
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00787	0.00883	0.05085
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00336	0.00328	0.00328
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01625	0.01707	0.06031
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00799	0.00895	0.05097

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00433	-0.00435	-0.00434
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00340	0.00427	0.05503
sky130_osu_sc_12T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00420	-0.00422	-0.00422
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00352	0.00439	0.05515

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00462	0.00461	0.00459
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00976	0.01156	0.06383
sky130_osu_sc_12T_ms__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00474	0.00473	0.00471
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00989	0.01168	0.06396

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00056	0.00080	0.06029
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00009	0.00152	0.06073
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00266	0.00540	0.11291
sky130_osu_sc_12T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00044	0.00092	0.06041
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00021	0.00164	0.06086
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00278	0.00553	0.11303

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02572	0.02751	0.10165
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01217	0.01459	0.07434
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02463	0.02871	0.12552
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01400	0.01627	0.07548
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01586	0.02024	0.12807
sky130_osu_sc_12T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02584	0.02764	0.10177
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01230	0.01471	0.07447
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02476	0.02884	0.12564
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01412	0.01639	0.07560
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01599	0.02036	0.12820

SKY130_OSU_SC_12T_MS__DFFx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__dff_1	32.23440
sky130_osu_sc_12T_ms__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_ms__dff_1	0.00300	0.00865	1.22701
sky130_osu_sc_12T_ms__dff_l	0.00300	0.00863	0.88535

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dff_1	0.00000	13.52230	16.93840
sky130_osu_sc_12T_ms__dff_l	0.00000	27.64900	31.06440

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dff_1	**CK->Q (RR)**	0.18621	0.69463	6.77249
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RR)**	0.18542	0.74351	6.70126

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__dff_1	**CK->Q (RF)**	0.26893	0.69518	5.52851
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RF)**	0.26897	0.73296	5.45980

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	hold	CK (R)	-0.04710	-0.05754	0.03855
	setup	CK (R)	0.13190	0.16311	0.77875
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.05024	-0.05812	0.03891
	setup	CK (R)	0.13165	0.16369	0.79703

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	hold	CK (R)	-0.10364	-0.25916	-2.57413
	setup	CK (R)	0.12608	0.27077	2.78683
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.10352	-0.25916	-2.56395
	setup	CK (R)	0.12608	0.27077	2.78698

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_ms__dff_1	min_pulse_width	CK ()	0.08598	0.42969	13.33370
	min_pulse_width	CK ()	0.14435	0.42969	13.33370
sky130_osu_sc_12T_ms__dff_l	min_pulse_width	CK ()	0.08598	0.42969	13.33370
	min_pulse_width	CK ()	0.14111	0.42969	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_12T_ms__dff_1	**min_pulse_width**	**CK ()**	0.19299	0.42969	13.33370
	min_pulse_width	**CK ()**	0.09895	0.42969	13.33370
sky130_osu_sc_12T_ms__dff_l	**min_pulse_width**	**CK ()**	0.19299	0.42969	13.33370
	min_pulse_width	**CK ()**	0.09895	0.42969	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01760	0.02036	0.10946
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01623	0.01902	0.10669

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01931	0.02050	0.08318
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01792	0.01912	0.08185

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00172	-0.00219	-0.00225
	!CK	0.00000	0.00000	0.00000
	!CK	0.00927	0.00999	0.05373
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00160	-0.00206	-0.00212
	!CK	0.00000	0.00000	0.00000
	!CK	0.00940	0.01011	0.05385

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00255	0.00257	0.00256
	!CK	0.00000	0.00000	0.00000
	!CK	0.01614	0.01702	0.06090
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00267	0.00269	0.00268
	!CK	0.00000	0.00000	0.00000
	!CK	0.01626	0.01715	0.06102

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00060	0.00077	0.06028
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00047	0.00098	0.06020
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00047	0.00089	0.06040
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00035	0.00110	0.06033

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01214	0.01450	0.07433
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02458	0.02647	0.10082
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02475	0.02905	0.12725
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01336	0.01567	0.07486
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01226	0.01463	0.07445
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02470	0.02656	0.10090
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02488	0.02918	0.12737
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01349	0.01580	0.07498

SKY130_OSU_SC_12T_MS__INVx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__inv_1	4.39560
sky130_osu_sc_12T_ms__inv_10	21.97800
sky130_osu_sc_12T_ms__inv_2	6.34920
sky130_osu_sc_12T_ms__inv_3	8.30280
sky130_osu_sc_12T_ms__inv_4	10.25640
sky130_osu_sc_12T_ms__inv_6	14.16360
sky130_osu_sc_12T_ms__inv_8	18.07080
sky130_osu_sc_12T_ms__inv_l	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_ms__inv_1	0.00289	1.20924
sky130_osu_sc_12T_ms__inv_10	0.02591	11.72449
sky130_osu_sc_12T_ms__inv_2	0.00538	2.45848
sky130_osu_sc_12T_ms__inv_3	0.00796	3.61719
sky130_osu_sc_12T_ms__inv_4	0.01049	4.86881
sky130_osu_sc_12T_ms__inv_6	0.01570	7.24989
sky130_osu_sc_12T_ms__inv_8	0.02080	9.56808
sky130_osu_sc_12T_ms__inv_l	0.00226	0.83436

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__inv_1	0.00000	1.98777	3.95181
sky130_osu_sc_12T_ms__inv_10	0.00000	19.85780	39.49090
sky130_osu_sc_12T_ms__inv_2	0.00000	3.97158	7.89823
sky130_osu_sc_12T_ms__inv_3	0.00000	5.95934	11.85000
sky130_osu_sc_12T_ms__inv_4	0.00000	7.94315	15.79640
sky130_osu_sc_12T_ms__inv_6	0.00000	11.91470	23.69460
sky130_osu_sc_12T_ms__inv_8	0.00000	15.88630	31.59280
sky130_osu_sc_12T_ms__inv_l	0.00000	9.05075	18.09000

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__inv_1	**A->Y (FR)**	0.02475	0.65810	10.07330
sky130_osu_sc_12T_ms__inv_10	**A->Y (FR)**	0.02812	0.40709	9.86594
sky130_osu_sc_12T_ms__inv_2	**A->Y (FR)**	0.01837	0.55027	9.93076
sky130_osu_sc_12T_ms__inv_3	**A->Y (FR)**	0.01972	0.51154	9.96870
sky130_osu_sc_12T_ms__inv_4	**A->Y (FR)**	0.01943	0.47963	9.92927
sky130_osu_sc_12T_ms__inv_6	**A->Y (FR)**	0.02153	0.44419	9.92839
sky130_osu_sc_12T_ms__inv_8	**A->Y (FR)**	0.02457	0.42128	9.90081
sky130_osu_sc_12T_ms__inv_l	**A->Y (FR)**	0.02809	0.68932	9.60765

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__inv_1	**A->Y (RF)**	0.02188	0.55579	8.52707
sky130_osu_sc_12T_ms__inv_10	**A->Y (RF)**	0.02679	0.34989	8.65060
sky130_osu_sc_12T_ms__inv_2	**A->Y (RF)**	0.01712	0.47922	8.63543
sky130_osu_sc_12T_ms__inv_3	**A->Y (RF)**	0.01835	0.44599	8.73168
sky130_osu_sc_12T_ms__inv_4	**A->Y (RF)**	0.01791	0.41817	8.73915
sky130_osu_sc_12T_ms__inv_6	**A->Y (RF)**	0.02084	0.38619	8.75996
sky130_osu_sc_12T_ms__inv_8	**A->Y (RF)**	0.02373	0.36531	8.73930
sky130_osu_sc_12T_ms__inv_l	**A->Y (RF)**	0.02443	0.57829	8.14835

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__inv_1	A	0.00000	0.00000	0.00000
	A	0.00404	0.00497	0.01732
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.03327	0.04904	0.16589
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00692	0.00949	0.03306
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.01067	0.01436	0.04968
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01356	0.01900	0.06556
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.02015	0.02858	0.09842
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.02669	0.04008	0.13158
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00314	0.00421	0.02044

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00065	0.00004	0.00802
sky130_osu_sc_12T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.01134	-0.00195	0.07669
sky130_osu_sc_12T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00223	-0.00060	0.01507
sky130_osu_sc_12T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00291	-0.00048	0.02294
sky130_osu_sc_12T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00453	-0.00131	0.03004
sky130_osu_sc_12T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00692	-0.00156	0.04448
sky130_osu_sc_12T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00929	-0.00156	0.06063
sky130_osu_sc_12T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00013	0.00041	0.00697

SKY130_OSU_SC_12T_MS__MUX2

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_12T_ms__mux2_1	0.02453	0.02441	0.00595	0.02014

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__mux2_1	0.00000	3.98005	3.98005

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__mux2_1	A0->Y (RR)	-	0.01213	0.06868	0.20060
	A1->Y (RR)	-	0.01391	0.07022	0.20099
	S0->Y (RR)	(!A0 * A1)	0.04471	0.15986	0.24147
	S0->Y (FR)	(A0 * !A1)	0.02703	0.17742	0.98814

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__mux2_1	A0->Y (FF)	-	0.01347	0.07682	0.21241
	A1->Y (FF)	-	0.01206	0.07554	0.21206
	S0->Y (FF)	(!A0 * A1)	0.05381	0.19962	0.77734
	S0->Y (RF)	(A0 * !A1)	0.02398	0.13968	0.47076

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00392	-0.00393	-0.00394
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00247	-0.00248	-0.00248
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00516	0.00798	0.06793
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00258	-0.00066	0.05871

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00393	0.00393	0.00394
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00265	0.00265	0.00265
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00069	0.00293	0.06275
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01088	0.01345	0.07274

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00088	-0.00089	-0.00088

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00095	0.00095	0.00095

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00109	-0.00109	-0.00109

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00109	0.00109	0.00109

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00096	0.00110	0.06069
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00092	0.00108	0.06082

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00841	0.01110	0.07052
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00763	0.01053	0.07023

SKY130_OSU_SC_12T_MS__NAND2x

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__nand2_1	6.34920
sky130_osu_sc_12T_ms__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nand2_1	0.00288	0.00288	1.04703
sky130_osu_sc_12T_ms__nand2_l	0.00221	0.00224	0.77783

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nand2_1	0.00000	1.98683	7.89808
sky130_osu_sc_12T_ms__nand2_l	0.00000	9.04896	36.17070

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nand2_1	A->Y (FR)	0.02578	0.62760	9.26098
	B->Y (FR)	0.02933	0.60520	8.87739
sky130_osu_sc_12T_ms__nand2_l	A->Y (FR)	0.02831	0.67172	9.19918
	B->Y (FR)	0.03389	0.67576	9.18985

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nand2_1	A->Y (RF)	0.03319	0.69712	10.18080
	B->Y (RF)	0.03768	0.66730	9.61028
sky130_osu_sc_12T_ms__nand2_l	A->Y (RF)	0.03638	0.75499	10.15670
	B->Y (RF)	0.04069	0.72227	9.52929

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00428	0.00501	0.01668
	B	0.00000	0.00000	0.00000
	B	0.00549	0.00617	0.01836
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00319	0.00410	0.01821
	B	0.00000	0.00000	0.00000
	B	0.00403	0.00490	0.01955

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00028	0.00005	0.00751
	B	0.00000	0.00000	0.00000
	B	-0.00028	-0.00009	0.00682
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00069	0.00091	0.00652
	B	0.00000	0.00000	0.00000
	B	0.00068	0.00081	0.00596

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00276	-0.00278	-0.00279
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00194	-0.00196	-0.00196

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00278	0.00282	0.00280
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00196	0.00199	0.00197

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00258	-0.00259	-0.00258
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00184	-0.00185	-0.00184

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00266	0.00261	0.00259
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00189	0.00185	0.00184

SKY130_OSU_SC_12T_MS__NOR2x

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__nor2_1	6.34920
sky130_osu_sc_12T_ms__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nor2_1	0.00284	0.00311	0.66401
sky130_osu_sc_12T_ms__nor2_l	0.00213	0.00234	0.47949

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nor2_1	0.00000	1.65723	3.95125
sky130_osu_sc_12T_ms__nor2_l	0.00000	6.75026	18.07760

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nor2_1	A->Y (FR)	0.05400	0.74744	9.34284
	B->Y (FR)	0.04174	0.75958	9.82322
sky130_osu_sc_12T_ms__nor2_l	A->Y (FR)	0.05674	0.79737	9.10239
	B->Y (FR)	0.04689	0.80792	9.46699

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__nor2_1	A->Y (RF)	0.03018	0.46572	6.03260
	B->Y (RF)	0.02351	0.45613	6.01470
sky130_osu_sc_12T_ms__nor2_l	A->Y (RF)	0.03138	0.48991	5.87282
	B->Y (RF)	0.02576	0.47970	5.85620

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00580	0.00604	0.01795
	B	0.00000	0.00000	0.00000
	B	0.00442	0.00490	0.02050
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00417	0.00443	0.01795
	B	0.00000	0.00000	0.00000
	B	0.00329	0.00426	0.02304

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00074	0.00126	0.01189
	B	0.00000	0.00000	0.00000
	B	-0.00049	0.00027	0.01043
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00062	0.00093	0.01013
	B	0.00000	0.00000	0.00000
	B	-0.00003	0.00055	0.00908

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00184	-0.00235	-0.00238
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00117	-0.00152	-0.00149

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00245	0.00249	0.00247
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00182	0.00183	0.00179

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00102	-0.00105	-0.00103
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00072	-0.00074	-0.00072

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00110	0.00111	0.00105
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00083	0.00084	0.00078

SKY130_OSU_SC_12T_MS__OAI21

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_ms__oai21_l	0.00288	0.00299	0.00251	0.65091

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai21_l	0.00000	7.62115	22.03920

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai21_l	A0->Y (FR)	0.05958	0.77221	9.73057
	A1->Y (FR)	0.07424	0.76551	9.25863
	B0->Y (FR)	0.03483	0.63201	8.28119

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai21_l	A0->Y (RF)	0.04595	0.57230	7.08825
	A1->Y (RF)	0.05629	0.57113	6.96694
	B0->Y (RF)	0.03537	0.60538	7.88214

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00622	0.00639	0.01974
	A1	0.00000	0.00000	0.00000
	A1	0.00764	0.00778	0.01857
	B0	0.00364	0.00482	0.02467

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00069	0.00086	0.00871
	A1	0.00000	0.00000	0.00000
	A1	0.00191	0.00190	0.01012
	B0	0.00093	0.00129	0.00991

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00088	-0.00089	-0.00088
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00245	-0.00245	-0.00246
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00248	-0.00250	-0.00249

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00126	0.00127	0.00122
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00245	0.00245	0.00246
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00254	0.00252	0.00249

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00161	-0.00211	-0.00215
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00242	-0.00245	-0.00243
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00245	-0.00247	-0.00245

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00254	0.00256	0.00255
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00242	0.00245	0.00243
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00250	0.00248	0.00246

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00204	-0.00204	-0.00209

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00209	0.00213	0.00210

SKY130_OSU_SC_12T_MS__OAI22

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__oai22_1	0.00273	0.00284	0.00301	0.00298	0.69594

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai22_1	0.00000	2.48278	7.89729

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai22_l	A0->Y (FR)	0.07839	0.76580	9.37694
	A1->Y (FR)	0.06679	0.78107	9.88278
	B0->Y (FR)	0.04304	0.75479	9.86284
	B1->Y (FR)	0.05595	0.74249	9.35604

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__oai22_l	A0->Y (RF)	0.07703	0.62516	7.48220
	A1->Y (RF)	0.06213	0.60670	7.42927
	B0->Y (RF)	0.05266	0.63983	8.22539
	B1->Y (RF)	0.06821	0.66162	8.29252

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.00983	0.00998	0.01997
	A1	0.00842	0.00894	0.02185
	B0	0.00463	0.00509	0.01917
	B1	0.00615	0.00635	0.01683

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.00109	0.00112	0.00944
	A1	-0.00005	0.00012	0.00813
	B0	-0.00010	0.00050	0.00962
	B1	0.00109	0.00129	0.01064

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00181	-0.00228	-0.00233
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00179	-0.00226	-0.00231
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00235	-0.00238	-0.00236
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00239	-0.00239	-0.00238

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00241	0.00244	0.00242
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00242	0.00246	0.00244
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00235	0.00239	0.00236
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00243	0.00241	0.00239

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00100	-0.00101	-0.00100
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00098	-0.00099	-0.00098
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00234	-0.00237	-0.00235
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00238	-0.00238	-0.00238

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00107	0.00108	0.00103
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00109	0.00110	0.00105
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00234	0.00237	0.00235
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00243	0.00241	0.00239

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00101	-0.00103	-0.00101
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00099	-0.00101	-0.00099
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00274	-0.00276	-0.00275
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00269	-0.00270	-0.00276

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00108	0.00110	0.00104
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00110	0.00112	0.00106
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00275	0.00277	0.00275
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00276	0.00282	0.00278

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00179	-0.00226	-0.00231
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00177	-0.00224	-0.00229
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00278	-0.00281	-0.00280
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00273	-0.00276	-0.00281

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00239	0.00243	0.00240
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00241	0.00244	0.00242
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00280	0.00283	0.00280
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00281	0.00285	0.00283

SKY130_OSU_SC_12T_MS__OR2x

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__or2_1	8.30280
sky130_osu_sc_12T_ms__or2_2	10.25640
sky130_osu_sc_12T_ms__or2_4	14.16360
sky130_osu_sc_12T_ms__or2_8	21.97800
sky130_osu_sc_12T_ms__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__or2_1	0.00319	0.00296	1.26273
sky130_osu_sc_12T_ms__or2_2	0.00320	0.00296	2.61520
sky130_osu_sc_12T_ms__or2_4	0.00320	0.00296	5.16047
sky130_osu_sc_12T_ms__or2_8	0.00320	0.00297	10.02152
sky130_osu_sc_12T_ms__or2_l	0.00239	0.00224	0.89438

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__or2_1	0.00000	2.66312	3.99685
sky130_osu_sc_12T_ms__or2_2	0.00000	3.66566	7.94338
sky130_osu_sc_12T_ms__or2_4	0.00000	5.67397	15.84180
sky130_osu_sc_12T_ms__or2_8	0.00000	9.69058	31.63860
sky130_osu_sc_12T_ms__or2_l	0.00000	11.28160	18.11260

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__or2_1	A->Y (RR)	0.06763	0.57591	6.69641
	B->Y (RR)	0.05775	0.54563	6.55065
sky130_osu_sc_12T_ms__or2_2	A->Y (RR)	0.07246	0.50287	6.76963
	B->Y (RR)	0.06230	0.47656	6.63082
sky130_osu_sc_12T_ms__or2_4	A->Y (RR)	0.09299	0.49087	6.96692
	B->Y (RR)	0.08260	0.46878	6.83017
sky130_osu_sc_12T_ms__or2_8	A->Y (RR)	0.13434	0.53252	7.23672
	B->Y (RR)	0.12366	0.51486	7.11992
sky130_osu_sc_12T_ms__or2_l	A->Y (RR)	0.07017	0.62380	6.62925
	B->Y (RR)	0.06126	0.59849	6.55017

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__or2_1	A->Y (FF)	0.10643	0.56958	6.21343
	B->Y (FF)	0.08918	0.56733	6.39835
sky130_osu_sc_12T_ms__or2_2	A->Y (FF)	0.12470	0.55004	6.56909
	B->Y (FF)	0.10761	0.55479	6.74953
sky130_osu_sc_12T_ms__or2_4	A->Y (FF)	0.17589	0.58808	6.88287
	B->Y (FF)	0.15890	0.60021	7.06174
sky130_osu_sc_12T_ms__or2_8	A->Y (FF)	0.28231	0.69864	7.19171
	B->Y (FF)	0.26528	0.71481	7.37876
sky130_osu_sc_12T_ms__or2_l	A->Y (FF)	0.11106	0.60344	6.08190
	B->Y (FF)	0.09518	0.60003	6.25604

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00454	0.00544	0.03672
	B	0.00000	0.00000	0.00000
	B	0.00336	0.00486	0.03913
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.00751	0.00862	0.04030
	B	0.00000	0.00000	0.00000
	B	0.00627	0.00797	0.04228
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01448	0.01574	0.04788
	B	0.00000	0.00000	0.00000
	B	0.01318	0.01524	0.04938
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.03053	0.03072	0.06471
	B	0.00000	0.00000	0.00000
	B	0.02907	0.03107	0.06551
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00357	0.00458	0.03578
	B	0.00000	0.00000	0.00000
	B	0.00301	0.00453	0.04236

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	A	0.00000	0.00000	0.00000
	A	0.00978	0.01050	0.04678
	B	0.00000	0.00000	0.00000
	B	0.00805	0.01010	0.05704
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01243	0.01299	0.04893
	B	0.00000	0.00000	0.00000
	B	0.01073	0.01256	0.05864
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02052	0.01928	0.05419
	B	0.00000	0.00000	0.00000
	B	0.01874	0.01883	0.06276
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.04435	0.03328	0.06545
	B	0.00000	0.00000	0.00000
	B	0.04221	0.03245	0.07300
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00752	0.00860	0.04414
	B	0.00000	0.00000	0.00000
	B	0.00636	0.00866	0.05566

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00184	-0.00237	-0.00240
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00184	-0.00237	-0.00240
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00185	-0.00237	-0.00240
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00185	-0.00237	-0.00240
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00115	-0.00153	-0.00149

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00250	0.00249
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00249	0.00249
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00249	0.00249
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00248	0.00250	0.00249
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00182	0.00184	0.00180

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00103	-0.00104	-0.00103
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00070	-0.00072	-0.00070

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00112	0.00106
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00112	0.00106
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00112	0.00106
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00111	0.00112	0.00106
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00082	0.00082	0.00076

SKY130_OSU_SC_12T_MS__TBUFIx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__tbufi_1	8.30280
sky130_osu_sc_12T_ms__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tbufi_1	0.00308	0.00404	0.69089
sky130_osu_sc_12T_ms__tbufi_l	0.00235	0.00307	0.48016

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tbufi_1	0.00000	2.00408	7.90299
sky130_osu_sc_12T_ms__tbufi_l	0.00000	9.05682	36.16510

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tbufi_1	A->Y (FR)	0.03871	0.74812	9.80234
	OE->Y (FR)	0.04182	0.32681	5.09326
	OE->Y (RR)	0.07194	0.64519	6.63358
sky130_osu_sc_12T_ms__tbufi_l	A->Y (FR)	0.04527	0.80530	9.43633
	OE->Y (FR)	0.04185	0.32677	5.09321
	OE->Y (RR)	0.07673	0.71627	6.62757

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tbufi_1	A->Y (RF)	0.03277	0.59270	7.84850
	OE->Y (FF)	0.04255	0.32682	5.09325
	OE->Y (RF)	0.03016	0.55546	7.17268
sky130_osu_sc_12T_ms__tbufi_l	A->Y (RF)	0.03636	0.61845	7.49885
	OE->Y (FF)	0.04283	0.32678	5.09321
	OE->Y (RF)	0.03314	0.57956	6.75390

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00425	0.00469	0.01782
	OE	0.00000	0.00000	0.00000
	OE	0.00422	0.00627	0.05949
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00361	0.00439	0.02017
	OE	0.00000	0.00000	0.00000
	OE	0.00343	0.00566	0.06079

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00039	0.00018	0.00877
	OE	0.00000	0.00000	0.00000
	OE	0.00262	0.00484	0.06546
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00042	0.00086	0.00785
	OE	0.00000	0.00000	0.00000
	OE	0.00246	0.00482	0.06435

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00190	-0.00192	-0.00189
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00162	-0.00163	-0.00162
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00137	-0.00138	-0.00137
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00117	-0.00119	-0.00117

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00190	0.00192	0.00189
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00167	0.00168	0.00164
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00137	0.00138	0.00137
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00126	0.00126	0.00122

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00161	0.00393	0.06512
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00134	0.00370	0.06484
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00142	0.00388	0.06406
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00105	0.00355	0.06374

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00507	0.00769	0.06876
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00501	0.00770	0.06877
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00384	0.00681	0.06727
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00375	0.00686	0.06717

SKY130_OSU_SC_12T_MS__TNBUFIx

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__tnbufi_1	8.30280
sky130_osu_sc_12T_ms__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tnbufi_1	0.00308	0.00460	0.69118
sky130_osu_sc_12T_ms__tnbufi_l	0.00225	0.00346	0.48019

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tnbufi_1	0.00000	3.31349	3.97502
sky130_osu_sc_12T_ms__tnbufi_l	0.00000	15.08370	18.10130

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tnbufi_1	A->Y (FR)	0.03902	0.74818	9.80452
	OE->Y (RR)	0.02861	0.32715	5.09353
	OE->Y (FR)	0.04820	0.73135	9.21732
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (FR)	0.04447	0.80399	9.43299
	OE->Y (RR)	0.03102	0.32686	5.09330
	OE->Y (FR)	0.05227	0.78987	8.92381

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_ms__tnbufi_1	A->Y (RF)	0.03212	0.59220	7.85042
	OE->Y (RF)	0.02841	0.32714	5.09357
	OE->Y (FF)	0.05321	0.49794	5.16350
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (RF)	0.03478	0.61701	7.49825
	OE->Y (RF)	0.03045	0.32686	5.09330
	OE->Y (FF)	0.05755	0.52851	4.89067

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00429	0.00473	0.01786
	OE	0.00000	0.00000	0.00000
	OE	0.01035	0.01344	0.07452
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00319	0.00398	0.01978
	OE	0.00000	0.00000	0.00000
	OE	0.00777	0.01094	0.07137

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00068	-0.00007	0.00850
	OE	0.00000	0.00000	0.00000
	OE	0.00893	0.01201	0.06807
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00016	0.00031	0.00730
	OE	0.00000	0.00000	0.00000
	OE	0.00700	0.01023	0.06736

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00158	-0.00161	-0.00159
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00126	-0.00128	-0.00127
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00104	-0.00105	-0.00100
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00073	-0.00073	-0.00073

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00158	0.00161	0.00159
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00138	0.00139	0.00135
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00122	0.00123	0.00122
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00113	0.00113	0.00110

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00255	-0.00048	0.06102
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00269	-0.00049	0.06100
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00155	0.00071	0.06117
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00175	0.00062	0.06103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00779	0.01104	0.07262
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00763	0.01086	0.07248
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00607	0.00938	0.07008
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00581	0.00926	0.06986

SKY130_OSU_SC_12T_MS__XNOR2

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xnor2_l	0.00617	0.00531	0.71556

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xnor2_l	0.00000	7.16462	11.87320

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xnor2_l	A->Y (RR)	B	0.09105	0.67849	6.81741
	A->Y (FR)	!B	0.05204	0.76460	9.90759
	B->Y (RR)	A	0.07424	0.66575	6.91966
	B->Y (FR)	!A	0.06562	0.75105	9.41783

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xnor2_l	A->Y (FF)	B	0.09259	0.57431	5.56516
	A->Y (RF)	!B	0.04424	0.57754	7.42316
	B->Y (FF)	A	0.07865	0.56245	5.56526
	B->Y (RF)	!A	0.05516	0.59030	7.42819

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00465	0.00646	0.06189
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01050	0.01362	0.08743
	B	A	0.00000	0.00000	0.00000
	B	A	0.00191	0.00430	0.06616
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01125	0.01418	0.08434

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01261	0.01494	0.07533
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00296	0.00524	0.07360
	B	A	0.00000	0.00000	0.00000
	B	A	0.01141	0.01429	0.07605
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00381	0.00605	0.07409

SKY130_OSU_SC_12T_MS__XOR2

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xor2_l	0.00620	0.00535	0.67812

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xor2_l	0.00000	7.16449	12.67690

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xor2_l	A->Y (RR)	!B	0.09343	0.69050	6.93384
	A->Y (FR)	B	0.06787	0.76726	9.52163
	B->Y (RR)	!A	0.07822	0.68353	6.94196
	B->Y (FR)	A	0.07435	0.77439	9.51040

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_ms__xor2_l	A->Y (FF)	!B	0.08506	0.55911	5.23000
	A->Y (RF)	B	0.04853	0.60923	7.76278
	B->Y (FF)	!A	0.08119	0.55915	5.36408
	B->Y (RF)	A	0.05400	0.57903	7.15781

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01236	0.01504	0.08339
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00267	0.00403	0.06329
	B	A	0.00000	0.00000	0.00000
	B	A	0.01262	0.01544	0.08281
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00179	0.00393	0.06434

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_ms__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00261	0.00463	0.07164
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01299	0.01562	0.07021
	B	A	0.00000	0.00000	0.00000
	B	A	0.00266	0.00466	0.07005
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01147	0.01447	0.07449

SKY130_OSU_SC_12T_MS_x

sky130_osu_sc_12T_ms_tt_1P80_100C.ccs
Cell Library: Process , Voltage 1.80, Temp 100.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__ant	4.39560
sky130_osu_sc_12T_ms__tiehi	4.39560
sky130_osu_sc_12T_ms__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_ms__ant	0.48460
sky130_osu_sc_12T_ms__tiehi	0.00000
sky130_osu_sc_12T_ms__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__ant	0.00000	192202.00000	384405.00000
sky130_osu_sc_12T_ms__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_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_12T_ms__ant	0.00000	0.00000	0.00000
	-0.00135	0.05170	0.79525

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_ms__ant	0.00000	0.00000	0.00000
	3.34581	3.19618	0.94236