sky130_osu_sc_12T_ms_ff_1P95_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_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.01121	0.01119	0.00859	1.90541	0.85904	1.67033
sky130_osu_sc_12T_ms__addf_l	0.01121	0.01119	0.00859	1.26156	0.86272	1.67073

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addf_1	0.00000	231.03300	274.54200
sky130_osu_sc_12T_ms__addf_l	0.00000	366.57100	545.71200

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)	0.09679	1.25463	22.13690
	B->CO (RR)	0.09578	1.23524	21.68050
	CI->CO (RR)	0.09029	1.28711	22.77100
	CON->CO (FR)	0.01515	0.52859	9.45528
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.09758	1.15450	17.44970
	B->CO (RR)	0.09665	1.14609	17.34800
	CI->CO (RR)	0.09109	1.18857	18.12370
	CON->CO (FR)	0.01819	0.57459	9.25529

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)	0.12354	1.53955	27.07850
	B->CO (FF)	0.10914	1.46544	25.82400
	CI->CO (FF)	0.10851	1.56728	27.79660
	CON->CO (RF)	0.01594	0.48607	8.72591
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.12095	1.35681	20.39960
	B->CO (FF)	0.10538	1.29360	19.67190
	CI->CO (FF)	0.10595	1.38590	21.13640
	CON->CO (RF)	0.01744	0.49541	7.95801

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)	0.09850	0.65386	8.36293
	B->CON (FR)	0.08274	0.62706	8.35588
	CI->CON (FR)	0.08348	0.68491	9.13155
sky130_osu_sc_12T_ms__addf_l	A->CON (FR)	0.09362	0.64973	8.38418
	B->CON (FR)	0.07853	0.62438	8.37216
	CI->CON (FR)	0.07860	0.68148	9.15292

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)	0.06943	0.47219	6.01994
	B->CON (RF)	0.06877	0.48912	6.33512
	CI->CON (RF)	0.06293	0.50844	6.72379
sky130_osu_sc_12T_ms__addf_l	A->CON (RF)	0.06706	0.47060	6.03653
	B->CON (RF)	0.06652	0.48767	6.35155
	CI->CON (RF)	0.06056	0.50696	6.74092

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)	0.18284	1.37689	21.17400
	B->S (-R)	0.18932	1.34891	20.20600
	CI->S (-R)	0.16664	1.40347	21.88970
	CON->S (RR)	0.05373	0.46651	6.61285
sky130_osu_sc_12T_ms__addf_l	A->S (-R)	0.17660	1.37205	21.17340
	B->S (-R)	0.18310	1.34422	20.20560
	CI->S (-R)	0.16041	1.39835	21.88960
	CON->S (RR)	0.05375	0.46654	6.61398

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)	0.16065	1.16131	17.29290
	B->S (-F)	0.15488	1.11211	16.72440
	CI->S (-F)	0.15485	1.19409	17.94810
	CON->S (FF)	0.06485	0.50910	6.95086
sky130_osu_sc_12T_ms__addf_l	A->S (-F)	0.15677	1.15827	17.29270
	B->S (-F)	0.15117	1.10954	16.72440
	CI->S (-F)	0.15090	1.19118	17.94860
	CON->S (FF)	0.06490	0.50910	6.95127

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	0.00683	0.01237	0.12971
	B	0.00798	0.01298	0.11977
	CI	0.00837	0.01410	0.13058
sky130_osu_sc_12T_ms__addf_l	A	0.00608	0.01043	0.09440
	B	0.00729	0.01129	0.09120
	CI	0.00762	0.01224	0.09641

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01558	0.02511	0.21856
	B	0.01531	0.02326	0.19375
	CI	0.01399	0.02381	0.21839
sky130_osu_sc_12T_ms__addf_l	A	0.01749	0.02435	0.15055
	B	0.01729	0.02300	0.13426
	CI	0.01594	0.02310	0.14979

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01419	0.02033	0.12368
	B	0.01412	0.01922	0.11204
	CI	0.01265	0.01914	0.12355
sky130_osu_sc_12T_ms__addf_l	A	0.01627	0.02185	0.11808
	B	0.01606	0.02068	0.10700
	CI	0.01479	0.02074	0.11804

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00542	0.00875	0.07556
	B	0.00665	0.01014	0.08214
	CI	0.00693	0.01095	0.08401
sky130_osu_sc_12T_ms__addf_l	A	0.00495	0.00862	0.07779
	B	0.00626	0.00967	0.08026
	CI	0.00653	0.01045	0.08211

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.00619	0.00991	0.18130
	B	0.00851	0.01207	0.16843
	CI	0.00982	0.01514	0.17308
sky130_osu_sc_12T_ms__addf_l	A	0.00618	0.00990	0.18129
	B	0.00850	0.01207	0.16840
	CI	0.00982	0.01514	0.17304

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.02989	0.03597	0.18740
	B	0.02540	0.03103	0.17012
	CI	0.02305	0.02917	0.16870
sky130_osu_sc_12T_ms__addf_l	A	0.02990	0.03597	0.18740
	B	0.03211	0.03725	0.18002
	CI	0.02305	0.02918	0.16869

SKY130_OSU_SC_12T_MS__ADDHx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00547	0.00581	1.83977	1.89175	1.94578
sky130_osu_sc_12T_ms__addh_l	0.00547	0.00581	1.26596	1.89392	1.31303

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addh_1	0.00000	263.27300	274.49700
sky130_osu_sc_12T_ms__addh_l	0.00000	533.96600	545.32300

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)	0.06304	0.47252	6.75643
	B->CO (RR)	0.06566	0.46812	6.87567
sky130_osu_sc_12T_ms__addh_l	A->CO (RR)	0.06325	0.51960	6.79934
	B->CO (RR)	0.06589	0.51476	6.83046

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)	0.05224	0.47869	7.10300
	B->CO (FF)	0.05620	0.49601	7.30111
sky130_osu_sc_12T_ms__addh_l	A->CO (FF)	0.05210	0.49211	6.53800
	B->CO (FF)	0.05593	0.51042	6.74739

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)	0.08821	0.48361	6.69770
	B->CON (RR)	0.09018	0.47870	6.85130
sky130_osu_sc_12T_ms__addh_l	A->CON (RR)	0.08215	0.47546	6.75792
	B->CON (RR)	0.08416	0.47072	6.83767

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)	0.07700	0.50052	7.26412
	B->CON (FF)	0.07484	0.51050	7.41380
sky130_osu_sc_12T_ms__addh_l	A->CON (FF)	0.07172	0.48750	7.16499
	B->CON (FF)	0.06973	0.49771	7.31246

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)	0.10144	1.02977	17.16230
	B->S (FR)	0.09896	1.04247	17.37600
	CON->S (FR)	0.01643	0.54332	9.77105
sky130_osu_sc_12T_ms__addh_l	A->S (FR)	0.09847	0.96150	13.78780
	B->S (FR)	0.09604	0.97239	13.96060
	CON->S (FR)	0.01887	0.58619	9.55854

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)	0.11028	0.99942	16.38910
	B->S (RF)	0.11227	0.99381	16.51420
	CON->S (RF)	0.01568	0.49170	8.88443
sky130_osu_sc_12T_ms__addh_l	A->S (RF)	0.10572	0.90950	12.75580
	B->S (RF)	0.10777	0.90339	12.79790
	CON->S (RF)	0.01705	0.50315	8.21295

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	0.00819	0.01148	0.08018
	B	0.00000	0.00000	0.00000
	B	0.00763	0.01116	0.09671
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00990	0.01292	0.07942
	B	0.00000	0.00000	0.00000
	B	0.00934	0.01252	0.09130

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	0.00966	0.01356	0.09871
	B	0.00000	0.00000	0.00000
	B	0.01041	0.01512	0.10693
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01086	0.01455	0.09322
	B	0.00000	0.00000	0.00000
	B	0.01160	0.01595	0.09974

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	0.00820	0.01148	0.08039
	B	0.00000	0.00000	0.00000
	B	0.00764	0.01117	0.09709
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.00991	0.01299	0.08102
	B	0.00000	0.00000	0.00000
	B	0.00935	0.01260	0.09296

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	0.00968	0.01361	0.09936
	B	0.00000	0.00000	0.00000
	B	0.01043	0.01514	0.10743
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01117	0.01496	0.09718
	B	0.00000	0.00000	0.00000
	B	0.01191	0.01641	0.10427

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	0.01046	0.01440	0.10135
	B	0.00000	0.00000	0.00000
	B	0.01131	0.01607	0.10932
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01242	0.01606	0.09525
	B	0.00000	0.00000	0.00000
	B	0.01321	0.01757	0.10193

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	0.00871	0.01198	0.08232
	B	0.00000	0.00000	0.00000
	B	0.00813	0.01167	0.09876
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.01000	0.01305	0.07989
	B	0.00000	0.00000	0.00000
	B	0.00942	0.01263	0.09151

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)	2.82964	2.72727	1.10420
sky130_osu_sc_12T_ms__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	2.83190	2.72955	1.10661

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)	2.82962	2.73129	1.18962
sky130_osu_sc_12T_ms__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	2.83187	2.73357	1.19203

SKY130_OSU_SC_12T_MS__AND2x

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00295	0.00307	1.85415
sky130_osu_sc_12T_ms__and2_2	0.00295	0.00307	3.62485
sky130_osu_sc_12T_ms__and2_4	0.00295	0.00307	7.00948
sky130_osu_sc_12T_ms__and2_6	0.00298	0.00307	10.17356
sky130_osu_sc_12T_ms__and2_8	0.00295	0.00308	13.30629
sky130_osu_sc_12T_ms__and2_l	0.00226	0.00234	1.26417

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__and2_1	0.00000	114.33900	182.82700
sky130_osu_sc_12T_ms__and2_2	0.00000	182.87100	183.28100
sky130_osu_sc_12T_ms__and2_4	0.00000	319.91700	365.29800
sky130_osu_sc_12T_ms__and2_6	0.00000	456.96200	547.71400
sky130_osu_sc_12T_ms__and2_8	0.00000	593.99400	730.14700
sky130_osu_sc_12T_ms__and2_l	0.00000	452.97700	723.61500

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)	0.04781	0.43875	6.84972
	B->Y (RR)	0.05154	0.42533	6.45729
sky130_osu_sc_12T_ms__and2_2	A->Y (RR)	0.05478	0.38444	6.81051
	B->Y (RR)	0.05854	0.36967	6.40275
sky130_osu_sc_12T_ms__and2_4	A->Y (RR)	0.07700	0.37871	6.91481
	B->Y (RR)	0.08079	0.36165	6.50834
sky130_osu_sc_12T_ms__and2_6	A->Y (RR)	0.10062	0.39554	6.89714
	B->Y (RR)	0.10431	0.37625	6.48907
sky130_osu_sc_12T_ms__and2_8	A->Y (RR)	0.12341	0.42020	6.99636
	B->Y (RR)	0.12720	0.39920	6.58283
sky130_osu_sc_12T_ms__and2_l	A->Y (RR)	0.05162	0.49884	6.98309
	B->Y (RR)	0.05531	0.48069	6.56334

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)	0.04291	0.43654	6.62481
	B->Y (FF)	0.04360	0.44157	6.66229
sky130_osu_sc_12T_ms__and2_2	A->Y (FF)	0.04784	0.38626	6.58520
	B->Y (FF)	0.04832	0.39069	6.65230
sky130_osu_sc_12T_ms__and2_4	A->Y (FF)	0.06674	0.38229	6.67288
	B->Y (FF)	0.06572	0.38311	6.74778
sky130_osu_sc_12T_ms__and2_6	A->Y (FF)	0.08739	0.40061	6.64822
	B->Y (FF)	0.08468	0.39811	6.72188
sky130_osu_sc_12T_ms__and2_8	A->Y (FF)	0.10703	0.42208	6.64828
	B->Y (FF)	0.10300	0.41745	6.72468
sky130_osu_sc_12T_ms__and2_l	A->Y (FF)	0.04376	0.44835	6.07631
	B->Y (FF)	0.04684	0.46353	6.23710

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	0.00842	0.01851	0.22852
	B	0.00000	0.00000	0.00000
	B	0.00837	0.01614	0.17964
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01242	0.02225	0.23428
	B	0.00000	0.00000	0.00000
	B	0.01239	0.01951	0.18404
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.02332	0.03096	0.24432
	B	0.00000	0.00000	0.00000
	B	0.02329	0.02876	0.19132
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.03862	0.04233	0.25581
	B	0.00000	0.00000	0.00000
	B	0.03862	0.03945	0.20107
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.05711	0.05416	0.27128
	B	0.00000	0.00000	0.00000
	B	0.05711	0.05118	0.20868
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.02196	0.03147	0.22434
	B	0.00000	0.00000	0.00000
	B	0.02183	0.02952	0.19712

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	0.01150	0.02233	0.21097
	B	0.00000	0.00000	0.00000
	B	0.01274	0.02329	0.20749
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.01709	0.02730	0.21567
	B	0.00000	0.00000	0.00000
	B	0.01825	0.02831	0.21263
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.03248	0.03936	0.22527
	B	0.00000	0.00000	0.00000
	B	0.03318	0.04016	0.22214
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.05099	0.05253	0.23607
	B	0.00000	0.00000	0.00000
	B	0.05102	0.05288	0.23272
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.07354	0.06675	0.24829
	B	0.00000	0.00000	0.00000
	B	0.07269	0.06676	0.24328
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.01483	0.02507	0.20535
	B	0.00000	0.00000	0.00000
	B	0.01581	0.02588	0.20397

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)	-0.00244	-0.00247	-0.00248
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00165	-0.00168	-0.00169
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00007	-0.00010	-0.00010
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00148	0.00146	0.00145
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00310	0.00308	0.00307
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00085	0.00083	0.00082

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)	0.00406	0.00410	0.00408
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00486	0.00490	0.00488
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00645	0.00649	0.00647
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00807	0.00811	0.00809
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00963	0.00966	0.00965
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00549	0.00551	0.00550

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)	-0.00227	-0.00229	-0.00228
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00148	-0.00150	-0.00149
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00010	0.00009	0.00010
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00169	0.00167	0.00168
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00327	0.00325	0.00327
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00097	0.00095	0.00096

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)	0.00404	0.00393	0.00389
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00484	0.00473	0.00468
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00643	0.00632	0.00628
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00802	0.00789	0.00787
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00961	0.00949	0.00946
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00548	0.00540	0.00536

SKY130_OSU_SC_12T_MS__AOI21

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00272	0.00288	0.00284	0.77834

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi21_l	0.00000	49.81470	109.47800

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)	0.05082	0.60460	8.03695
	A1->Y (FR)	0.03915	0.54700	7.42359
	B0->Y (FR)	0.03825	0.64955	8.98707

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)	0.03550	0.41297	5.43843
	A1->Y (RF)	0.03240	0.43680	5.87962
	B0->Y (RF)	0.02084	0.41437	5.73909

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	0.00819	0.01108	0.08102
	A1	0.00000	0.00000	0.00000
	A1	0.00677	0.00960	0.07691
	B0	0.00482	0.00919	0.09002

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	0.00370	0.00571	0.05683
	A1	0.00000	0.00000	0.00000
	A1	0.00388	0.00641	0.06240
	B0	0.00102	0.00419	0.06223

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)	-0.00168	-0.00231	-0.00192
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00188	-0.00191	-0.00189
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00267	-0.00269	-0.00268

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)	0.00351	0.00352	0.00340
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00348	0.00350	0.00349
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00286	0.00274	0.00271

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)	-0.00166	-0.00230	-0.00193
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00188	-0.00191	-0.00190
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00297	-0.00297	-0.00299

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)	0.00352	0.00352	0.00340
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00348	0.00350	0.00349
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00300	0.00304	0.00301

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)	-0.00094	-0.00097	-0.00089

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)	0.00231	0.00230	0.00188

SKY130_OSU_SC_12T_MS__AOI22

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__aoi22_l	0.00272	0.00288	0.00300	0.00282	0.75732

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi22_l	0.00000	56.21680	181.94300

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)	0.06518	0.61729	7.96387
	A1->Y (FR)	0.05776	0.60543	7.88799
	B0->Y (FR)	0.04024	0.64663	8.86025
	B1->Y (FR)	0.04799	0.65990	8.95407

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)	0.04579	0.42105	5.35933
	A1->Y (RF)	0.04262	0.44479	5.79050
	B0->Y (RF)	0.02318	0.42157	5.75549
	B1->Y (RF)	0.02699	0.39815	5.31900

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	0.01004	0.01282	0.08665
	A1	0.00863	0.01146	0.08191
	B0	0.00523	0.00958	0.09141
	B1	0.00670	0.01095	0.09088

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.00558	0.00763	0.06233
	A1	0.00575	0.00828	0.06668
	B0	0.00300	0.00585	0.06128
	B1	0.00290	0.00527	0.05568

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)	-0.00139	-0.00208	-0.00123
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00109	-0.00112	-0.00110
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00267	-0.00269	-0.00268
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00267	-0.00269	-0.00268

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)	0.00432	0.00431	0.00404
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00427	0.00430	0.00427
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00286	0.00274	0.00270
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00286	0.00274	0.00271

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)	-0.00137	-0.00211	-0.00123
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00110	-0.00113	-0.00111
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00296	-0.00296	-0.00298
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00296	-0.00296	-0.00298

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)	0.00433	0.00431	0.00404
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00427	0.00429	0.00428
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00299	0.00302	0.00300
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00299	0.00302	0.00300

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)	-0.00093	-0.00095	-0.00088
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00001	-0.00002	-0.00002
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00309	-0.00311	-0.00312
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00309	-0.00311	-0.00312

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)	0.00234	0.00233	0.00193
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00198	0.00198	0.00192
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00312	0.00319	0.00314
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00312	0.00318	0.00314

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)	-0.00095	-0.00096	-0.00090
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00002	-0.00004	-0.00004
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00282	-0.00283	-0.00283
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00282	-0.00283	-0.00283

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)	0.00235	0.00235	0.00195
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00198	0.00200	0.00193
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00299	0.00289	0.00285
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00299	0.00289	0.00285

SKY130_OSU_SC_12T_MS__BUFx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00308	1.72491
sky130_osu_sc_12T_ms__buf_2	0.00308	3.50072
sky130_osu_sc_12T_ms__buf_4	0.00307	6.90349
sky130_osu_sc_12T_ms__buf_6	0.00082	1.80000
sky130_osu_sc_12T_ms__buf_8	0.00308	13.46225
sky130_osu_sc_12T_ms__buf_l	0.00231	1.26582

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__buf_1	0.00000	91.66940	91.68450
sky130_osu_sc_12T_ms__buf_2	0.00000	137.52000	182.93100
sky130_osu_sc_12T_ms__buf_4	0.00000	229.20700	365.40200
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ms__buf_8	0.00000	412.57200	730.33100
sky130_osu_sc_12T_ms__buf_l	0.00000	362.87900	363.02000

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)**	0.03891	0.40805	6.16424
sky130_osu_sc_12T_ms__buf_2	**A->Y (RR)**	0.04232	0.34000	6.03337
sky130_osu_sc_12T_ms__buf_4	**A->Y (RR)**	0.05766	0.32609	6.12767
sky130_osu_sc_12T_ms__buf_8	**A->Y (RR)**	0.09051	0.35744	6.28712
sky130_osu_sc_12T_ms__buf_l	**A->Y (RR)**	0.04082	0.45352	6.33486

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)**	0.03949	0.42261	6.38242
sky130_osu_sc_12T_ms__buf_2	**A->Y (FF)**	0.04466	0.38327	6.60421
sky130_osu_sc_12T_ms__buf_4	**A->Y (FF)**	0.06321	0.38177	6.80207
sky130_osu_sc_12T_ms__buf_8	**A->Y (FF)**	0.10281	0.42315	6.93062
sky130_osu_sc_12T_ms__buf_l	**A->Y (FF)**	0.04210	0.45725	6.36434

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	0.00570	0.01379	0.16295
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.00924	0.01794	0.16953
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.01839	0.02667	0.18227
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.04466	0.04945	0.20990
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01204	0.02158	0.20705

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	0.01081	0.02154	0.21024
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01622	0.02646	0.21561
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.03121	0.03825	0.22465
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.07184	0.06559	0.24415
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.01466	0.02560	0.21810

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
	-0.00081	-0.00081	-0.00076

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
	0.00081	0.00081	0.00076

SKY130_OSU_SC_12T_MS__DFFNRx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00285	0.00281	0.00897	1.84021	1.82348
sky130_osu_sc_12T_ms__dffnr_l	0.00285	0.00281	0.00897	1.28816	1.27563

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffnr_1	0.00000	477.82800	792.36700
sky130_osu_sc_12T_ms__dffnr_l	0.00000	749.06700	1063.68000

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)	0.21828	1.11025	15.71210
	QN->Q (FR)	0.01797	0.60574	10.78590
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FR)	0.21746	1.18510	15.08020
	QN->Q (FR)	0.01986	0.63021	10.20760

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)	0.14508	1.03003	15.76230
	QN->Q (RF)	0.01730	0.53031	9.41174
	RN->Q (FF)	0.14252	1.03837	15.85320
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FF)	0.14786	1.12914	15.44100
	QN->Q (RF)	0.01835	0.53819	8.70944
	RN->Q (FF)	0.14533	1.13712	15.53780

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)	0.12533	0.55639	7.05987
	RN->QN (FR)	0.12273	0.56432	7.15151
sky130_osu_sc_12T_ms__dffnr_l	CK->QN (FR)	0.12577	0.60868	7.13015
	RN->QN (FR)	0.12314	0.61655	7.21866

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)**	0.19547	0.62314	6.77133
sky130_osu_sc_12T_ms__dffnr_l	**CK->QN (FF)**	0.19182	0.63726	6.34883

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)	-0.07400	-0.13806	-1.52821
	setup	CK (F)	0.10693	0.15274	1.91576
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.07419	-0.13806	-1.52985
	setup	CK (F)	0.10691	0.15274	1.91589

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)	-0.04330	-0.04342	-0.01395
	setup	CK (F)	0.10870	0.13470	0.13515
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.04467	-0.04496	-0.01350
	setup	CK (F)	0.10845	0.13417	0.13792

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)	-0.07400	-0.13806	-1.52821
	setup	CK (F)	0.10693	0.15274	1.91576
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.07419	-0.13806	-1.52985
	setup	CK (F)	0.10691	0.15274	1.91589

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)	-0.04330	-0.04342	-0.01395
	setup	CK (F)	0.10870	0.13470	0.13515
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.04467	-0.04496	-0.01350
	setup	CK (F)	0.10845	0.13417	0.13792

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)	0.08944	0.07420	-0.70980
	removal	CK (F)	-0.07054	-0.06325	0.80449
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.08944	0.07420	-0.71166
	removal	CK (F)	-0.07054	-0.06325	0.80449

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)	0.08944	0.07420	-0.70980
	removal	CK (F)	-0.07054	-0.06325	0.80449
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.08944	0.07420	-0.71166
	removal	CK (F)	-0.07054	-0.06325	0.80449

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 ()	0.08779	0.39917	13.33370
	min_pulse_width	RN ()	0.08476	0.39917	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	RN ()	0.08476	0.39917	13.33370
	min_pulse_width	RN ()	0.08476	0.39917	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 ()	0.10290	0.39917	13.33370
	min_pulse_width	CK ()	0.13918	0.39917	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.10290	0.39917	13.33370
	min_pulse_width	CK ()	0.13918	0.39917	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 ()	0.09686	0.39917	13.33370
	min_pulse_width	CK ()	0.07267	0.39917	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.09383	0.39917	13.33370
	min_pulse_width	CK ()	0.06965	0.39917	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	0.02356	0.02811	0.13313
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.02689	0.03249	0.15654

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	0.02876	0.03747	0.18431
	RN	-0.00113	-0.09252	-1.74928
	RN	0.03186	0.03604	0.13630
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.03148	0.04147	0.21309
	RN	-0.00113	-0.07468	-1.22431
	RN	0.03457	0.04000	0.16375

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	0.02703	0.03579	0.18124
	RN	-0.00113	-0.09201	-1.73329
	RN	0.03013	0.03433	0.13303
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.02973	0.03969	0.21025
	RN	-0.00113	-0.07425	-1.21238
	RN	0.03283	0.03829	0.16211

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	0.02194	0.02651	0.13104
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.02363	0.02922	0.15420

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)	0.01562	0.02362	0.22120
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.00979	0.01723	0.19785
	!CK	0.00000	0.00000	0.00000
	!CK	0.00055	0.00004	0.00047
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)	0.01798	0.02598	0.22359
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.01216	0.01959	0.20021
	!CK	0.00000	0.00000	0.00000
	!CK	0.00291	0.00240	0.00283

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)	0.02359	0.03218	0.22794
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.01208	0.02041	0.20516
	!CK	0.00000	0.00000	0.00000
	!CK	0.00644	0.00645	0.00632
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)	0.02595	0.03454	0.23051
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.01444	0.02277	0.20752
	!CK	0.00000	0.00000	0.00000
	!CK	0.00880	0.00881	0.00868

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)	0.01782	0.02984	0.29323
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01049	0.02147	0.26016
sky130_osu_sc_12T_ms__dffnr_l	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.02018	0.03220	0.29559
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01285	0.02383	0.26253

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)	0.02443	0.03687	0.29781
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01133	0.02376	0.26677
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.02679	0.03923	0.30017
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01369	0.02612	0.26913

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)	0.00304	0.01402	0.25972
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01841	0.03757	0.38358
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00929	0.02922	0.45904
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02044	0.03252	0.39754
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00642	0.01726	0.26312
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00541	0.01639	0.26209
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02077	0.03993	0.38594
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01165	0.03158	0.46140
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02280	0.03488	0.39991
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00878	0.01962	0.26548

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)	0.01677	0.02943	0.27597
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01973	0.04220	0.47613
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02133	0.03349	0.27989
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01913	0.03177	0.27833
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02210	0.04456	0.47849
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02369	0.03585	0.28225

SKY130_OSU_SC_12T_MS__DFFRx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00285	0.00281	0.00863	1.84059	1.82264
sky130_osu_sc_12T_ms__dffr_l	0.00285	0.00281	0.00861	1.28684	1.27631

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffr_1	0.00000	477.82400	792.71600
sky130_osu_sc_12T_ms__dffr_l	0.00000	749.06300	1064.03000

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)	0.17716	1.00316	14.49080
	QN->Q (FR)	0.01797	0.60579	10.78730
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RR)	0.17616	1.07731	13.86280
	QN->Q (FR)	0.01986	0.62991	10.20040

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)	0.18931	1.02128	14.96550
	QN->Q (RF)	0.01730	0.53036	9.41311
	RN->Q (FF)	0.14269	1.03892	15.85980
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RF)	0.19199	1.12141	14.63450
	QN->Q (RF)	0.01835	0.53798	8.70399
	RN->Q (FF)	0.14549	1.13730	15.52300

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)	0.16953	0.54788	6.25470
	RN->QN (FR)	0.12288	0.56468	7.14994
sky130_osu_sc_12T_ms__dffr_l	CK->QN (RR)	0.16989	0.60115	6.33949
	RN->QN (FR)	0.12330	0.61712	7.22340

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)**	0.15432	0.51630	5.55625
sky130_osu_sc_12T_ms__dffr_l	**CK->QN (RF)**	0.15049	0.53042	5.13450

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)	-0.04128	-0.04266	0.85080
	setup	CK (R)	0.13818	0.16342	0.57742
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.04147	-0.04266	0.96579
	setup	CK (R)	0.13691	0.16342	0.56457

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)	-0.07087	-0.18846	-1.78001
	setup	CK (R)	0.08855	0.20149	3.72171
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.07183	-0.18936	-1.76731
	setup	CK (R)	0.08855	0.20149	3.72158

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)	-0.04128	-0.04266	0.85080
	setup	CK (R)	0.13818	0.16342	0.57742
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.04147	-0.04266	0.96579
	setup	CK (R)	0.13691	0.16342	0.56457

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)	-0.07087	-0.18846	-1.78001
	setup	CK (R)	0.08855	0.20149	3.72171
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.07183	-0.18936	-1.76731
	setup	CK (R)	0.08855	0.20149	3.72158

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)	0.11815	0.15576	1.02260
	removal	CK (R)	-0.02846	-0.03165	-0.04897
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.11826	0.15532	1.00766
	removal	CK (R)	-0.02846	-0.03165	-0.04897

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)	0.11815	0.15576	1.02260
	removal	CK (R)	-0.02846	-0.03165	-0.04897
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.11826	0.15532	1.00766
	removal	CK (R)	-0.02846	-0.03165	-0.04897

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 ()	0.08476	0.39917	13.33370
	min_pulse_width	RN ()	0.08779	0.39917	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	RN ()	0.08476	0.39917	13.33370
	min_pulse_width	RN ()	0.08476	0.39917	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 ()	0.08779	0.39917	13.33370
	min_pulse_width	CK ()	0.09988	0.39917	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.08174	0.39917	13.33370
	min_pulse_width	CK ()	0.09686	0.39917	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 ()	0.17546	0.39917	13.33370
	min_pulse_width	CK ()	0.07569	0.39917	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.17546	0.39917	13.33370
	min_pulse_width	CK ()	0.07569	0.39917	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	0.01660	0.02443	0.16626
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01978	0.02860	0.19136

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	0.02338	0.02682	0.12024
	RN	-0.00113	-0.09253	-1.74964
	RN	0.03017	0.03436	0.13428
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02596	0.03065	0.14979
	RN	-0.00113	-0.07464	-1.22306
	RN	0.03293	0.03838	0.16250

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	0.02143	0.02488	0.11837
	RN	-0.00113	-0.09199	-1.73249
	RN	0.02866	0.03287	0.13163
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02408	0.02877	0.14741
	RN	-0.00113	-0.07427	-1.21302
	RN	0.03137	0.03683	0.16091

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	0.01449	0.02232	0.16446
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01603	0.02487	0.18715

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	0.00159	0.00107	0.00151
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01533	0.02331	0.22091
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01005	0.01742	0.19805
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00395	0.00343	0.00387
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01769	0.02566	0.22326
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01241	0.01978	0.20038

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	0.00699	0.00700	0.00687
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02232	0.03093	0.22668
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01025	0.01858	0.20338
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00935	0.00936	0.00923
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02468	0.03329	0.22904
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01261	0.02094	0.20574

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)	0.01049	0.02148	0.26017
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01652	0.02854	0.29193
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)	0.01285	0.02384	0.26253
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01888	0.03090	0.29429

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)	0.01133	0.02376	0.26677
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02415	0.03656	0.29753
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)	0.01369	0.02612	0.26913
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02651	0.03892	0.29989

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)	0.00284	0.01393	0.25983
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00847	0.01991	0.29026
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00607	0.01719	0.26308
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00519	0.01629	0.26219
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01083	0.02227	0.29263
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00843	0.01955	0.26544

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)	0.01648	0.02918	0.27592
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03477	0.04709	0.38363
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02710	0.03928	0.30436
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03232	0.05497	0.43563
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02125	0.03352	0.28000
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01884	0.03155	0.27829
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03713	0.04945	0.38599
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02946	0.04164	0.30672
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03469	0.05734	0.43800
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02361	0.03588	0.28236

SKY130_OSU_SC_12T_MS__DFFSRx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00281	0.00282	0.00658	0.00877	1.94889	1.93466
sky130_osu_sc_12T_ms__dffsr_l	0.00281	0.00282	0.00657	0.00877	1.28113	1.27838

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffsr_1	0.00000	359.38100	494.24000
sky130_osu_sc_12T_ms__dffsr_l	0.00000	630.60200	765.56000

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)	0.18887	1.02610	15.06370
	QN->Q (FR)	0.01677	0.58274	10.50690
	RN->Q (RR)	0.15550	1.01151	15.31870
	SN->Q (FR)	0.13669	1.03916	16.11460
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RR)	0.19051	1.09018	13.81480
	QN->Q (FR)	0.01981	0.62927	10.17390
	RN->Q (RR)	0.15709	1.07476	14.06150
	SN->Q (FR)	0.13857	1.10173	14.85500

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)	0.21880	1.06840	15.58030
	QN->Q (RF)	0.01714	0.54170	9.78078
	RN->Q (FF)	0.14444	1.05793	16.51670
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RF)	0.22290	1.15326	14.60340
	QN->Q (RF)	0.01824	0.53626	8.66759
	RN->Q (FF)	0.14843	1.14246	15.52580

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)	0.19875	0.57902	6.38616
	RN->QN (FR)	0.12460	0.56878	7.31723
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RR)	0.20070	0.63620	6.38748
	RN->QN (FR)	0.12638	0.62565	7.30631

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)	0.16687	0.53899	5.91809
	RN->QN (RF)	0.13382	0.52438	6.17306
	SN->QN (FF)	0.11505	0.55212	6.96784
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RF)	0.16498	0.54470	5.15134
	RN->QN (RF)	0.13219	0.53064	5.40462
	SN->QN (FF)	0.11343	0.55701	6.19640

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)	-0.04708	-0.04887	0.46171
	setup	CK (R)	0.14321	0.17305	0.63991
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.04718	-0.04887	0.46326
	setup	CK (R)	0.14340	0.17272	0.63899

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)	-0.08393	-0.20141	-1.70324
	setup	CK (R)	0.10662	0.21191	3.77563
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.08352	-0.19953	-1.68064
	setup	CK (R)	0.10662	0.21191	3.77628

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)	-0.04708	-0.04887	0.46171
	setup	CK (R)	0.14321	0.17305	0.63991
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.04718	-0.04887	0.46326
	setup	CK (R)	0.14340	0.17272	0.63899

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)	-0.08393	-0.20141	-1.70324
	setup	CK (R)	0.10662	0.21191	3.77563
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.08352	-0.19953	-1.68064
	setup	CK (R)	0.10662	0.21191	3.77628

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)	0.11349	0.14958	1.09241
	removal	CK (R)	-0.01831	-0.02431	-0.01367
	hold	SN (R)	-0.10859	-0.20001	-0.86455
	setup	SN (R)	0.13172	0.23477	7.13944
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.11165	0.15081	1.09364
	removal	CK (R)	-0.01831	-0.02431	-0.01367
	hold	SN (R)	-0.10514	-0.19287	-0.85002
	setup	SN (R)	0.13231	0.23018	7.01800

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)	0.11349	0.14958	1.09241
	removal	CK (R)	-0.01831	-0.02431	-0.01367
	hold	SN (R)	-0.11031	-0.20001	-0.86455
	hold	SN (R)	-0.10859	-0.20001	-0.86766
	setup	SN (R)	0.13047	0.23276	6.75877
	setup	SN (R)	0.13172	0.23477	7.13944
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.11165	0.15081	1.09364
	removal	CK (R)	-0.01831	-0.02431	-0.01367
	hold	SN (R)	-0.10514	-0.19287	-0.86566
	hold	SN (R)	-0.10634	-0.19644	-0.85002
	setup	SN (R)	0.13231	0.23000	6.57958
	setup	SN (R)	0.12800	0.23018	7.01800

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 ()	0.09988	0.39917	13.33370
	min_pulse_width	RN ()	0.10290	0.39917	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	RN ()	0.09988	0.39917	13.33370
	min_pulse_width	RN ()	0.09988	0.39917	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)	0.02968	0.05158	6.66688
	removal	CK (R)	-0.01759	-0.03821	-0.28826
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.02919	0.05158	6.90644
	removal	CK (R)	-0.01759	-0.03821	-0.29226

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)	0.02968	0.05158	6.66688
	removal	CK (R)	-0.01759	-0.03821	-0.28826
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.02919	0.05158	6.90644
	removal	CK (R)	-0.01759	-0.03821	-0.29226

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 ()	0.10895	0.39917	13.33370
	min_pulse_width	SN ()	0.11197	0.39917	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	SN ()	0.10895	0.39917	13.33370
	min_pulse_width	SN ()	0.10593	0.39917	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 ()	0.09081	0.39917	13.33370
	min_pulse_width	CK ()	0.11197	0.39917	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.08779	0.39917	13.33370
	min_pulse_width	CK ()	0.11197	0.39917	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 ()	0.18453	0.39917	13.33370
	min_pulse_width	CK ()	0.09081	0.39917	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.18150	0.39917	13.33370
	min_pulse_width	CK ()	0.09081	0.39917	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	0.01907	0.02637	0.16560
	RN	0.02875	0.03339	0.15044
	SN	-0.00113	-0.09576	-1.85259
	SN	0.02565	0.03054	0.14747
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02219	0.03056	0.19148
	RN	0.03191	0.03765	0.17667
	SN	-0.00113	-0.07444	-1.21762
	SN	0.02894	0.03498	0.17340

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	0.02083	0.02494	0.13261
	RN	-0.00113	-0.09576	-1.85259
	RN	0.03160	0.03672	0.15527
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02328	0.02791	0.14823
	RN	-0.00113	-0.07444	-1.21763
	RN	0.03427	0.03989	0.17066

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	0.01941	0.02355	0.13086
	RN	-0.00113	-0.09534	-1.83887
	RN	0.03054	0.03566	0.15381
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02200	0.02663	0.14649
	RN	-0.00113	-0.07434	-1.21500
	RN	0.03321	0.03885	0.16981

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	0.01708	0.02436	0.16335
	RN	0.02673	0.03138	0.14838
	SN	-0.00113	-0.09534	-1.83900
	SN	0.02439	0.02931	0.14526
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01846	0.02680	0.18727
	RN	0.02815	0.03388	0.17189
	SN	-0.00113	-0.07434	-1.21498
	SN	0.02603	0.03207	0.17025

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	0.00158	0.00157	0.00158
	(!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)	0.01866	0.02614	0.22329
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00809	0.01539	0.19716
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00822	0.01551	0.19676
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00888	0.01617	0.19766
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00393	0.00394
	(!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)	0.02103	0.02850	0.22513
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01045	0.01775	0.19953
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01058	0.01785	0.19912
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01124	0.01851	0.20003

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	0.00719	0.00709	0.00704
	(!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)	0.02446	0.03267	0.22736
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01192	0.01999	0.20277
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01130	0.01932	0.20248
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01210	0.02017	0.20328
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00955	0.00945	0.00940
	(!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)	0.02682	0.03503	0.22972
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01428	0.02235	0.20513
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01366	0.02169	0.20484
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01446	0.02253	0.20563

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)	0.00710	0.01812	0.25805
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01641	0.02805	0.28950
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)	0.00946	0.02049	0.26042
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01877	0.03041	0.29187

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)	0.01189	0.02435	0.26611
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02266	0.03509	0.29455
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)	0.01425	0.02672	0.26847
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02502	0.03745	0.29691

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)	-0.00330	-0.00330	-0.00336
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00362	-0.00497	-0.00428
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00290	-0.00358	-0.00322
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00748	0.01414	0.18963
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)	-0.00095	-0.00095	-0.00101
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00126	-0.00261	-0.00192
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00053	-0.00121	-0.00086
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00983	0.01649	0.19198

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)	0.01040	0.01048	0.01043
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01066	0.01069	0.01042
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01060	0.01068	0.01048
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01865	0.02507	0.20155
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)	0.01277	0.01285	0.01280
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01302	0.01306	0.01278
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01296	0.01304	0.01285
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02103	0.02748	0.20393

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)	0.00277	0.01382	0.25982
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00968	0.02103	0.29001
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01051	0.02186	0.29070
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00359	0.01468	0.26058
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00763	0.02768	0.45868
sky130_osu_sc_12T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00512	0.01618	0.26219
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01204	0.02339	0.29237
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01288	0.02421	0.29306
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00595	0.01704	0.26294
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00999	0.03004	0.46105

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)	0.03615	0.04847	0.37840
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01675	0.02941	0.27626
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02525	0.03750	0.30354
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02587	0.03820	0.30486
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03480	0.05704	0.43958
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01869	0.03093	0.27744
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02117	0.04337	0.47635
sky130_osu_sc_12T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03851	0.05083	0.38076
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01911	0.03177	0.27863
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02762	0.03986	0.30590
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02824	0.04050	0.30723
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03717	0.05940	0.44196
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02105	0.03330	0.27980
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02354	0.04576	0.47873

SKY130_OSU_SC_12T_MS__DFFSx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00282	0.00542	0.00869	1.82354	1.83246
sky130_osu_sc_12T_ms__dffs_l	0.00283	0.00542	0.00869	1.27825	1.28333

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffs_1	0.00000	722.21900	1629.21000
sky130_osu_sc_12T_ms__dffs_l	0.00000	993.38000	1900.53000

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)	0.14255	0.95291	14.19790
	QN->Q (FR)	0.01792	0.60063	10.66820
	SN->Q (FR)	0.10854	0.99937	15.32600
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RR)	0.14379	1.03213	13.61730
	QN->Q (FR)	0.01981	0.62653	10.12350
	SN->Q (FR)	0.10974	1.07639	14.73830

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)	0.20757	1.03943	14.83430
	QN->Q (RF)	0.01723	0.52676	9.32545
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RF)	0.20934	1.13748	14.55350
	QN->Q (RF)	0.01830	0.53518	8.64501

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)	0.18747	0.57106	6.30196
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RR)	0.18693	0.62269	6.39151

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)	0.12126	0.47327	5.44245
	SN->QN (FF)	0.08681	0.51967	6.57800
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RF)	0.11972	0.49073	5.02583
	SN->QN (FF)	0.08560	0.53429	6.14522

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)	-0.03344	-0.03474	0.80822
	setup	CK (R)	0.10720	0.14232	0.45500
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.03157	-0.03474	0.92069
	setup	CK (R)	0.10779	0.14228	0.45188

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)	-0.07672	-0.19254	-2.76369
	setup	CK (R)	0.09708	0.20497	3.77850
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.07723	-0.19254	-2.88262
	setup	CK (R)	0.09705	0.20497	3.77884

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)	-0.03344	-0.03474	0.80822
	setup	CK (R)	0.10720	0.14232	0.45500
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.03157	-0.03474	0.92069
	setup	CK (R)	0.10779	0.14228	0.45188

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)	-0.07672	-0.19254	-2.76369
	setup	CK (R)	0.09708	0.20497	3.77850
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.07723	-0.19254	-2.88262
	setup	CK (R)	0.09705	0.20497	3.77884

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)	0.02899	0.05954	6.53620
	removal	CK (R)	-0.01991	-0.04516	-0.50944
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.02886	0.05922	6.33339
	removal	CK (R)	-0.01991	-0.04516	-0.50944

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)	0.02899	0.05954	6.53620
	removal	CK (R)	-0.01991	-0.04516	-0.50944
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.02886	0.05922	6.33339
	removal	CK (R)	-0.01991	-0.04516	-0.50944

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 ()	0.07569	0.39917	13.33370
	min_pulse_width	SN ()	0.07872	0.39917	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	SN ()	0.07569	0.39917	13.33370
	min_pulse_width	SN ()	0.07267	0.39917	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 ()	0.06662	0.39917	13.33370
	min_pulse_width	CK ()	0.10593	0.39917	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.06360	0.39917	13.33370
	min_pulse_width	CK ()	0.10290	0.39917	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 ()	0.14523	0.39917	13.33370
	min_pulse_width	CK ()	0.08476	0.39917	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.14523	0.39917	13.33370
	min_pulse_width	CK ()	0.08476	0.39917	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	0.01467	0.02262	0.16538
	SN	-0.00113	-0.09202	-1.73344
	SN	0.01998	0.02796	0.17400
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01790	0.02686	0.18922
	SN	-0.00113	-0.07434	-1.21489
	SN	0.02331	0.03233	0.19823

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	0.03612	0.03952	0.13492
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.03819	0.04280	0.16259

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	0.03244	0.03582	0.13069
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.03512	0.03974	0.15924

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	0.01311	0.02107	0.16305
	SN	-0.00113	-0.09229	-1.74185
	SN	0.01917	0.02715	0.17289
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01475	0.02374	0.18544
	SN	-0.00113	-0.07452	-1.21969
	SN	0.02097	0.02997	0.19549

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	0.01142	0.01141	0.01142
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01972	0.02848	0.23432
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00682	0.01429	0.19661
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01378	0.01377	0.01378
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02208	0.03084	0.23668
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00918	0.01665	0.19898

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	0.01711	0.01702	0.01696
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03118	0.03949	0.23590
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01037	0.01865	0.20193
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01947	0.01938	0.01932
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.03354	0.04186	0.23827
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01273	0.02101	0.20429

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)	-0.00236	-0.00240	-0.00239
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01170	0.01885	0.20654
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)	-0.00001	-0.00004	-0.00003
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01406	0.02122	0.20889

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)	0.00795	0.00793	0.00786
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01288	0.02203	0.21648
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)	0.01031	0.01029	0.01023
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01525	0.02435	0.21885

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)	0.00204	0.01314	0.25929
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01344	0.02457	0.27071
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00643	0.02692	0.45876
sky130_osu_sc_12T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00439	0.01549	0.26166
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01581	0.02693	0.27308
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00879	0.02928	0.46114

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)	0.03716	0.04981	0.39178
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01569	0.02841	0.27540
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03592	0.05823	0.43789
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.02845	0.04072	0.28746
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01933	0.04188	0.47579
sky130_osu_sc_12T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03952	0.05218	0.39414
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01805	0.03077	0.27777
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03829	0.06058	0.44027
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.03081	0.04309	0.28982
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02170	0.04424	0.47817

SKY130_OSU_SC_12T_MS__DFFx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00298	0.00844	1.60476
sky130_osu_sc_12T_ms__dff_l	0.00298	0.00844	1.18679

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dff_1	0.00000	315.74400	397.69200
sky130_osu_sc_12T_ms__dff_l	0.00000	586.73700	668.46900

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)**	0.12089	0.50050	5.78051
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RR)**	0.12158	0.55551	5.97198

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)**	0.17615	0.50874	5.13922
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RF)**	0.17747	0.53965	5.04532

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)	-0.02743	-0.03127	1.24328
	setup	CK (R)	0.08720	0.12773	0.40238
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.02743	-0.03127	1.24519
	setup	CK (R)	0.08652	0.12445	0.40101

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)	-0.06569	-0.18677	-2.47419
	setup	CK (R)	0.08343	0.20149	3.77979
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.06333	-0.18680	-2.47444
	setup	CK (R)	0.08343	0.20149	3.77890

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 ()	0.05755	0.39917	13.33370
	min_pulse_width	CK ()	0.09383	0.39917	13.33370
sky130_osu_sc_12T_ms__dff_l	min_pulse_width	CK ()	0.05453	0.39917	13.33370
	min_pulse_width	CK ()	0.09383	0.39917	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 ()**	0.12406	0.39917	13.33370
	min_pulse_width	**CK ()**	0.06360	0.39917	13.33370
sky130_osu_sc_12T_ms__dff_l	**min_pulse_width**	**CK ()**	0.12406	0.39917	13.33370
	min_pulse_width	**CK ()**	0.06360	0.39917	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	0.02802	0.04691	0.38740
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.03329	0.05211	0.39064

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	0.02975	0.04089	0.30947
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.03323	0.04437	0.31190

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	0.00080	0.00029	0.00073
	!CK	0.00000	0.00000	0.00000
	!CK	0.01303	0.02129	0.22189
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00316	0.00264	0.00309
	!CK	0.00000	0.00000	0.00000
	!CK	0.01539	0.02365	0.22425

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	0.00618	0.00618	0.00605
	!CK	0.00000	0.00000	0.00000
	!CK	0.02088	0.02945	0.22887
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00854	0.00854	0.00841
	!CK	0.00000	0.00000	0.00000
	!CK	0.02324	0.03181	0.23123

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)	0.00199	0.01311	0.25926
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00245	0.01361	0.25967
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00435	0.01547	0.26163
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00481	0.01597	0.26203

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)	0.01565	0.02843	0.27537
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.03045	0.04311	0.38033
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.03096	0.05403	0.44287
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01734	0.02966	0.27631
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01801	0.03076	0.27774
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.03281	0.04547	0.38269
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.03332	0.05639	0.44524
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01970	0.03202	0.27867

SKY130_OSU_SC_12T_MS__INVx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00285	1.58189
sky130_osu_sc_12T_ms__inv_10	0.02549	15.50751
sky130_osu_sc_12T_ms__inv_2	0.00529	3.20305
sky130_osu_sc_12T_ms__inv_3	0.00783	4.72305
sky130_osu_sc_12T_ms__inv_4	0.01032	6.32183
sky130_osu_sc_12T_ms__inv_6	0.01544	9.42502
sky130_osu_sc_12T_ms__inv_8	0.02046	12.64355
sky130_osu_sc_12T_ms__inv_l	0.00226	1.05526

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__inv_1	0.00000	45.82740	91.20390
sky130_osu_sc_12T_ms__inv_10	0.00000	458.25500	912.01300
sky130_osu_sc_12T_ms__inv_2	0.00000	91.65950	182.42000
sky130_osu_sc_12T_ms__inv_3	0.00000	137.48200	273.61400
sky130_osu_sc_12T_ms__inv_4	0.00000	183.31400	364.83000
sky130_osu_sc_12T_ms__inv_6	0.00000	274.96600	547.23500
sky130_osu_sc_12T_ms__inv_8	0.00000	366.61600	729.63600
sky130_osu_sc_12T_ms__inv_l	0.00000	181.21400	362.09300

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)**	0.01709	0.53289	9.07785
sky130_osu_sc_12T_ms__inv_10	**A->Y (FR)**	0.02150	0.31880	8.95225
sky130_osu_sc_12T_ms__inv_2	**A->Y (FR)**	0.01301	0.44100	8.88959
sky130_osu_sc_12T_ms__inv_3	**A->Y (FR)**	0.01413	0.40692	8.95415
sky130_osu_sc_12T_ms__inv_4	**A->Y (FR)**	0.01410	0.37706	8.87447
sky130_osu_sc_12T_ms__inv_6	**A->Y (FR)**	0.01596	0.34691	8.88875
sky130_osu_sc_12T_ms__inv_8	**A->Y (FR)**	0.01846	0.33022	8.96280
sky130_osu_sc_12T_ms__inv_l	**A->Y (FR)**	0.01988	0.56229	8.63666

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)**	0.01598	0.45077	7.67721
sky130_osu_sc_12T_ms__inv_10	**A->Y (RF)**	0.02106	0.26129	7.90260
sky130_osu_sc_12T_ms__inv_2	**A->Y (RF)**	0.01269	0.37696	7.78344
sky130_osu_sc_12T_ms__inv_3	**A->Y (RF)**	0.01379	0.34645	7.91013
sky130_osu_sc_12T_ms__inv_4	**A->Y (RF)**	0.01362	0.31980	7.88736
sky130_osu_sc_12T_ms__inv_6	**A->Y (RF)**	0.01600	0.29117	7.92145
sky130_osu_sc_12T_ms__inv_8	**A->Y (RF)**	0.01836	0.27441	7.98993
sky130_osu_sc_12T_ms__inv_l	**A->Y (RF)**	0.01750	0.46076	7.03051

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	0.00448	0.00993	0.08651
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.03893	0.11437	0.81615
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00773	0.02021	0.16867
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.01190	0.03094	0.24643
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01518	0.04222	0.32971
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.02278	0.06581	0.49341
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.03057	0.08965	0.64797
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00355	0.00853	0.09124

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	0.00125	0.00459	0.05425
sky130_osu_sc_12T_ms__inv_10	**A**	0.00000	0.00000	0.00000
	A	0.01093	0.06363	0.52195
sky130_osu_sc_12T_ms__inv_2	**A**	0.00000	0.00000	0.00000
	A	0.00157	0.00947	0.10687
sky130_osu_sc_12T_ms__inv_3	**A**	0.00000	0.00000	0.00000
	A	0.00298	0.01652	0.15745
sky130_osu_sc_12T_ms__inv_4	**A**	0.00000	0.00000	0.00000
	A	0.00334	0.02202	0.21058
sky130_osu_sc_12T_ms__inv_6	**A**	0.00000	0.00000	0.00000
	A	0.00501	0.03427	0.31410
sky130_osu_sc_12T_ms__inv_8	**A**	0.00000	0.00000	0.00000
	A	0.00745	0.05063	0.41455
sky130_osu_sc_12T_ms__inv_l	**A**	0.00000	0.00000	0.00000
	A	0.00716	0.00950	0.04933

SKY130_OSU_SC_12T_MS__MUX2

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.12696	0.12687	0.00587	0.12314

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__mux2_1	0.00000	91.64110	91.66880

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)	-	0.00769	0.06138	0.36530
	A1->Y (RR)	-	0.00865	0.06190	0.36483
	S0->Y (RR)	(!A0 * A1)	0.03076	0.12224	0.24610
	S0->Y (FR)	(A0 * !A1)	0.01923	0.18341	1.72504

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)	-	0.00857	0.06989	0.38760
	A1->Y (FF)	-	0.00802	0.06915	0.38679
	S0->Y (FF)	(!A0 * A1)	0.03486	0.18473	1.29645
	S0->Y (RF)	(A0 * !A1)	0.01792	0.12550	0.65888

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	-	-0.00445	-0.00446	-0.00447
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00065	-0.00065	-0.00064
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00574	0.01919	0.25941
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00231	0.00968	0.24906

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	-	0.00447	0.00448	0.00448
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00487	0.00487	0.00487
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00151	0.01399	0.25371
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01226	0.02500	0.26481

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)	-0.00020	-0.00020	-0.00021

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)	0.00179	0.00179	0.00179

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)	-0.00118	-0.00118	-0.00119

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)	0.00119	0.00119	0.00119

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)	-0.00034	0.01200	0.25126
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00030	0.01203	0.25147

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)	0.00945	0.02252	0.26223
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00859	0.02205	0.26202

SKY130_OSU_SC_12T_MS__NAND2x

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00283	0.00284	1.49774
sky130_osu_sc_12T_ms__nand2_l	0.00221	0.00225	1.05889

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nand2_1	0.00000	45.80350	182.37800
sky130_osu_sc_12T_ms__nand2_l	0.00000	180.80000	722.57600

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)	0.01781	0.52196	8.75952
	B->Y (FR)	0.02029	0.49757	8.29478
sky130_osu_sc_12T_ms__nand2_l	A->Y (FR)	0.01998	0.55982	8.59087
	B->Y (FR)	0.02420	0.56294	8.58510

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)	0.02215	0.55339	9.27511
	B->Y (RF)	0.02545	0.53340	8.88659
sky130_osu_sc_12T_ms__nand2_l	A->Y (RF)	0.02445	0.58937	8.99321
	B->Y (RF)	0.02766	0.56580	8.46779

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	0.00478	0.00927	0.07412
	B	0.00000	0.00000	0.00000
	B	0.00625	0.01078	0.08095
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00361	0.00771	0.07510
	B	0.00000	0.00000	0.00000
	B	0.00468	0.00882	0.07950

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	0.00448	0.00705	0.04845
	B	0.00000	0.00000	0.00000
	B	0.00435	0.00668	0.04760
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.01927	0.02081	0.04725
	B	0.00000	0.00000	0.00000
	B	0.01879	0.02003	0.04655

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)	-0.00312	-0.00314	-0.00315
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00223	-0.00225	-0.00225

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)	0.00314	0.00317	0.00316
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00225	0.00227	0.00226

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)	-0.00288	-0.00290	-0.00288
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00208	-0.00210	-0.00208

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)	0.00305	0.00292	0.00290
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00221	0.00211	0.00210

SKY130_OSU_SC_12T_MS__NOR2x

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00280	0.00307	0.94837
sky130_osu_sc_12T_ms__nor2_l	0.00214	0.00234	0.66834

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nor2_1	0.00000	39.29240	91.07810
sky130_osu_sc_12T_ms__nor2_l	0.00000	132.15600	359.40600

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)	0.03521	0.59207	8.58406
	B->Y (FR)	0.02664	0.61806	9.14326
sky130_osu_sc_12T_ms__nor2_l	A->Y (FR)	0.03774	0.63452	8.31565
	B->Y (FR)	0.03073	0.65709	8.82374

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)	0.02212	0.37367	5.36167
	B->Y (RF)	0.01727	0.36561	5.33045
sky130_osu_sc_12T_ms__nor2_l	A->Y (RF)	0.02263	0.38852	5.07759
	B->Y (RF)	0.01863	0.38221	5.04278

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	0.00658	0.01002	0.08239
	B	0.00000	0.00000	0.00000
	B	0.00493	0.00964	0.08981
sky130_osu_sc_12T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00479	0.00806	0.07861
	B	0.00000	0.00000	0.00000
	B	0.00374	0.00832	0.09261

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	0.00176	0.00486	0.06513
	B	0.00000	0.00000	0.00000
	B	0.00105	0.00427	0.06004
sky130_osu_sc_12T_ms__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00327	0.00572	0.05786
	B	0.00000	0.00000	0.00000
	B	0.00594	0.00832	0.05494

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)	-0.00186	-0.00244	-0.00196
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00115	-0.00141	0.00072

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)	0.00353	0.00354	0.00341
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00503	0.00498	0.00436

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)	-0.00101	-0.00103	-0.00097
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00072	-0.00072	-0.00049

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)	0.00169	0.00169	0.00146
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00234	0.00229	0.00149

SKY130_OSU_SC_12T_MS__OAI21

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00284	0.00296	0.00250	0.89984

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai21_l	0.00000	155.47100	452.58500

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)	0.03869	0.61704	8.83389
	A1->Y (FR)	0.04904	0.59373	8.28245
	B0->Y (FR)	0.02444	0.53140	7.80586

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)	0.03133	0.44193	6.16338
	A1->Y (RF)	0.03768	0.44000	6.06498
	B0->Y (RF)	0.02378	0.47663	6.88778

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	0.00712	0.01096	0.08091
	A1	0.00000	0.00000	0.00000
	A1	0.00880	0.01168	0.07775
	B0	0.00413	0.00959	0.10614

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	0.00952	0.01143	0.05357
	A1	0.00000	0.00000	0.00000
	A1	0.00989	0.01165	0.05762
	B0	0.00777	0.01033	0.05826

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)	0.00214	0.00213	0.00218
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00277	-0.00277	-0.00276
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00277	-0.00278	-0.00277

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)	0.00484	0.00484	0.00461
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00277	0.00280	0.00278
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00295	0.00284	0.00279

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)	0.00138	0.00078	0.00128
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00273	-0.00275	-0.00273
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00273	-0.00275	-0.00273

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)	0.00659	0.00661	0.00646
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00273	0.00278	0.00275
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00291	0.00280	0.00275

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)	-0.00234	-0.00236	-0.00240

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)	0.00240	0.00243	0.00241

SKY130_OSU_SC_12T_MS__OAI22

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__oai22_l	0.00270	0.00280	0.00297	0.00294	0.97384

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai22_l	0.00000	58.90410	182.14500

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)	0.05110	0.58946	8.37019
	A1->Y (FR)	0.04326	0.61775	8.97571
	B0->Y (FR)	0.02750	0.60272	8.95935
	B1->Y (FR)	0.03613	0.57471	8.34986

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)	0.05171	0.48203	6.61890
	A1->Y (RF)	0.04221	0.46979	6.55966
	B0->Y (RF)	0.03540	0.50363	7.29822
	B1->Y (RF)	0.04529	0.51821	7.38727

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	0.01061	0.01353	0.08050
	A1	0.00896	0.01310	0.08786
	B0	0.00523	0.00951	0.08260
	B1	0.00702	0.01000	0.07469

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.00243	0.00450	0.05450
	A1	0.00180	0.00400	0.05075
	B0	0.00185	0.00468	0.05525
	B1	0.00249	0.00506	0.05716

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)	-0.00178	-0.00230	-0.00183
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00134	-0.00186	-0.00140
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00265	-0.00266	-0.00264
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00265	-0.00265	-0.00265

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)	0.00354	0.00356	0.00341
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00398	0.00400	0.00385
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00266	0.00270	0.00267
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00286	0.00270	0.00267

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)	-0.00091	-0.00093	-0.00087
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00048	-0.00050	-0.00044
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00264	-0.00264	-0.00264
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00264	-0.00266	-0.00264

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)	0.00173	0.00172	0.00150
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00216	0.00216	0.00193
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00265	0.00268	0.00266
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00286	0.00272	0.00267

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)	-0.00092	-0.00095	-0.00089
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00049	-0.00049	-0.00045
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00312	-0.00314	-0.00312
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00304	-0.00307	-0.00312

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)	0.00174	0.00174	0.00151
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00218	0.00218	0.00195
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00319	0.00322	0.00316
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00312	0.00316	0.00313

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)	-0.00175	-0.00228	-0.00182
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00132	-0.00184	-0.00138
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00318	-0.00320	-0.00318
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00309	-0.00312	-0.00317

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)	0.00353	0.00354	0.00340
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00396	0.00398	0.00383
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00325	0.00329	0.00322
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00318	0.00321	0.00319

SKY130_OSU_SC_12T_MS__OR2x

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00317	0.00293	1.71863
sky130_osu_sc_12T_ms__or2_2	0.00318	0.00293	3.47962
sky130_osu_sc_12T_ms__or2_4	0.00318	0.00293	6.85641
sky130_osu_sc_12T_ms__or2_8	0.00318	0.00294	13.29107
sky130_osu_sc_12T_ms__or2_l	0.00241	0.00225	1.17979

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__or2_1	0.00000	62.43920	92.13420
sky130_osu_sc_12T_ms__or2_2	0.00000	85.58940	183.38300
sky130_osu_sc_12T_ms__or2_4	0.00000	131.88400	365.85700
sky130_osu_sc_12T_ms__or2_8	0.00000	224.46800	730.79300
sky130_osu_sc_12T_ms__or2_l	0.00000	222.95200	363.23500

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)	0.04739	0.42063	5.96166
	B->Y (RR)	0.04011	0.39820	5.78914
sky130_osu_sc_12T_ms__or2_2	A->Y (RR)	0.05121	0.35320	5.84419
	B->Y (RR)	0.04382	0.33118	5.65578
sky130_osu_sc_12T_ms__or2_4	A->Y (RR)	0.06685	0.33881	5.96385
	B->Y (RR)	0.05921	0.31955	5.76896
sky130_osu_sc_12T_ms__or2_8	A->Y (RR)	0.09987	0.36831	6.11156
	B->Y (RR)	0.09199	0.35303	5.93166
sky130_osu_sc_12T_ms__or2_l	A->Y (RR)	0.04947	0.46558	5.87304
	B->Y (RR)	0.04313	0.44735	5.75247

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)	0.06692	0.46586	6.63155
	B->Y (FF)	0.05520	0.47750	7.04945
sky130_osu_sc_12T_ms__or2_2	A->Y (FF)	0.07826	0.43093	6.84336
	B->Y (FF)	0.06669	0.44433	7.25287
sky130_osu_sc_12T_ms__or2_4	A->Y (FF)	0.11106	0.43887	7.06001
	B->Y (FF)	0.09954	0.45759	7.45883
sky130_osu_sc_12T_ms__or2_8	A->Y (FF)	0.17958	0.49818	7.17864
	B->Y (FF)	0.16808	0.52338	7.56559
sky130_osu_sc_12T_ms__or2_l	A->Y (FF)	0.07177	0.49460	6.35905
	B->Y (FF)	0.06085	0.50598	6.72325

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	0.00647	0.01261	0.13296
	B	0.00000	0.00000	0.00000
	B	0.00605	0.01329	0.14284
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01024	0.01672	0.13912
	B	0.00000	0.00000	0.00000
	B	0.00964	0.01714	0.14904
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.01978	0.02645	0.15439
	B	0.00000	0.00000	0.00000
	B	0.01889	0.02648	0.15934
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.04687	0.05030	0.18656
	B	0.00000	0.00000	0.00000
	B	0.04539	0.04968	0.18246
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.00794	0.01386	0.13669
	B	0.00000	0.00000	0.00000
	B	0.01231	0.01938	0.15614

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	0.01322	0.01990	0.17034
	B	0.00000	0.00000	0.00000
	B	0.01127	0.02045	0.20127
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01985	0.02501	0.17539
	B	0.00000	0.00000	0.00000
	B	0.01789	0.02542	0.20610
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.03922	0.03725	0.18301
	B	0.00000	0.00000	0.00000
	B	0.03728	0.03784	0.21383
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.09611	0.06732	0.20161
	B	0.00000	0.00000	0.00000
	B	0.09424	0.06862	0.23163
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.01590	0.02221	0.16020
	B	0.00000	0.00000	0.00000
	B	0.01464	0.02314	0.18809

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)	-0.00185	-0.00246	-0.00198
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00185	-0.00246	-0.00198
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00185	-0.00245	-0.00197
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00183	-0.00244	-0.00195
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00111	-0.00141	0.00071

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)	0.00357	0.00356	0.00344
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00357	0.00359	0.00344
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00358	0.00357	0.00345
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00359	0.00362	0.00347
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00504	0.00499	0.00437

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)	-0.00100	-0.00102	-0.00097
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00100	-0.00102	-0.00097
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00099	-0.00102	-0.00096
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00097	-0.00100	-0.00094
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00069	-0.00070	-0.00048

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)	0.00171	0.00170	0.00148
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00171	0.00171	0.00149
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00172	0.00172	0.00149
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00173	0.00174	0.00151
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00234	0.00229	0.00149

SKY130_OSU_SC_12T_MS__TBUFIx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00304	0.00404	0.99215
sky130_osu_sc_12T_ms__tbufi_l	0.00235	0.00312	0.67592

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tbufi_1	0.00000	46.08420	182.26100
sky130_osu_sc_12T_ms__tbufi_l	0.00000	180.90600	720.78200

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)	0.02475	0.60304	9.03328
	OE->Y (FR)	0.03038	0.32311	5.34251
	OE->Y (RR)	0.04754	0.47898	6.03751
sky130_osu_sc_12T_ms__tbufi_l	A->Y (FR)	0.02973	0.65288	8.77481
	OE->Y (FR)	0.03128	0.32312	5.34252
	OE->Y (RR)	0.05132	0.54172	6.00419

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)	0.02192	0.46736	6.94843
	OE->Y (FF)	0.03084	0.32310	5.34251
	OE->Y (RF)	0.02067	0.43254	6.32201
sky130_osu_sc_12T_ms__tbufi_l	A->Y (RF)	0.02450	0.49037	6.55856
	OE->Y (FF)	0.03166	0.32311	5.34252
	OE->Y (RF)	0.02286	0.44766	5.76369

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	0.00714	0.01114	0.07812
	OE	0.00000	0.00000	0.00000
	OE	0.00693	0.01829	0.23133
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.01356	0.01717	0.08621
	OE	0.00000	0.00000	0.00000
	OE	0.01244	0.02308	0.22380

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	0.00333	0.00604	0.05243
	OE	0.00000	0.00000	0.00000
	OE	0.00649	0.01912	0.26149
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.01476	0.01657	0.05259
	OE	0.00000	0.00000	0.00000
	OE	0.01634	0.02764	0.24094

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)	-0.00221	-0.00224	-0.00217
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00169	-0.00170	-0.00166
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00170	-0.00170	-0.00163
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00127	-0.00128	-0.00118

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)	0.00221	0.00224	0.00217
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00217	0.00218	0.00205
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00170	0.00170	0.00163
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00200	0.00201	0.00177

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)	0.00333	0.01640	0.26440
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00233	0.01551	0.26377
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00753	0.01932	0.23813
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00421	0.01609	0.23631

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)	0.00578	0.01950	0.26856
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00553	0.01929	0.26807
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00449	0.01712	0.24149
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00421	0.01681	0.23980

SKY130_OSU_SC_12T_MS__TNBUFIx

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00304	0.00448	0.99186
sky130_osu_sc_12T_ms__tnbufi_l	0.00225	0.00341	0.67703

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tnbufi_1	0.00000	76.34890	91.57110
sky130_osu_sc_12T_ms__tnbufi_l	0.00000	301.73000	362.66800

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)	0.02484	0.60281	9.03032
	OE->Y (RR)	0.02192	0.32345	5.34288
	OE->Y (FR)	0.03162	0.56121	8.13351
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (FR)	0.02906	0.65210	8.78016
	OE->Y (RR)	0.02342	0.32316	5.34261
	OE->Y (FR)	0.03485	0.61088	7.80503

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)	0.02150	0.46719	6.94797
	OE->Y (RF)	0.02168	0.32345	5.34288
	OE->Y (FF)	0.03605	0.40766	5.30905
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (RF)	0.02340	0.49023	6.56644
	OE->Y (RF)	0.02323	0.32320	5.34260
	OE->Y (FF)	0.03962	0.43828	5.07361

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	0.00479	0.00880	0.07613
	OE	0.00000	0.00000	0.00000
	OE	0.01176	0.02564	0.26899
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00363	0.00732	0.07746
	OE	0.00000	0.00000	0.00000
	OE	0.00896	0.02163	0.24179

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	0.00113	0.00386	0.05034
	OE	0.00000	0.00000	0.00000
	OE	0.01173	0.02498	0.24870
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00694	0.00880	0.04496
	OE	0.00000	0.00000	0.00000
	OE	0.01416	0.02627	0.23251

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)	-0.00112	-0.00113	-0.00103
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00050	-0.00051	-0.00047
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00180	0.00179	0.00187
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00222	0.00222	0.00232

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)	0.00260	0.00262	0.00256
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00257	0.00257	0.00245
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00449	0.00450	0.00442
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00478	0.00478	0.00456

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)	-0.00195	0.01112	0.25997
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00239	0.01114	0.25944
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00133	0.01312	0.23503
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00087	0.01279	0.23308

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)	0.00964	0.02398	0.27319
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00873	0.02338	0.27254
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01002	0.02294	0.24514
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00679	0.01990	0.24311

SKY130_OSU_SC_12T_MS__XNOR2

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00609	0.00523	1.01639

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xnor2_l	0.00000	166.43800	273.81300

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	0.05984	0.49756	6.12689
	A->Y (FR)	!B	0.03291	0.60180	8.99852
	B->Y (RR)	A	0.04922	0.49542	6.34573
	B->Y (FR)	!A	0.04268	0.58112	8.44669

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	0.06011	0.45133	5.63536
	A->Y (RF)	!B	0.02966	0.45691	6.69218
	B->Y (FF)	A	0.05190	0.44580	5.65530
	B->Y (RF)	!A	0.03640	0.46345	6.67345

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	0.00981	0.02117	0.24879
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01172	0.02857	0.34265
	B	A	0.00000	0.00000	0.00000
	B	A	0.00660	0.01984	0.27517
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01266	0.02857	0.32950

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	0.01792	0.03069	0.27813
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00887	0.02346	0.31215
	B	A	0.00000	0.00000	0.00000
	B	A	0.01800	0.03172	0.28489
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00840	0.02291	0.30855

SKY130_OSU_SC_12T_MS__XOR2

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.00613	0.00528	0.96222

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xor2_l	0.00000	166.39600	297.60300

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	0.06227	0.51200	6.32722
	A->Y (FR)	B	0.04448	0.60846	8.74706
	B->Y (RR)	!A	0.05217	0.51065	6.36472
	B->Y (FR)	A	0.04889	0.61010	8.70198

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	0.05682	0.44473	5.30459
	A->Y (RF)	B	0.03183	0.47050	6.74485
	B->Y (FF)	!A	0.05355	0.44613	5.52491
	B->Y (RF)	A	0.03628	0.45154	6.35880

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	0.01649	0.03146	0.31846
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00538	0.01648	0.25595
	B	A	0.00000	0.00000	0.00000
	B	A	0.01684	0.03165	0.31285
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00434	0.01675	0.26198

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	0.00884	0.02278	0.29702
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01805	0.03009	0.24728
	B	A	0.00000	0.00000	0.00000
	B	A	0.00865	0.02184	0.28850
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01634	0.02950	0.27216

SKY130_OSU_SC_12T_MS_x

sky130_osu_sc_12T_ms_ff_1P95_100C.ccs
Cell Library: Process , Voltage 1.95, 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	0.80027
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	322352.00000	644705.00000
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
	-0.00091	0.09551	1.53822

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
	5.61081	5.38488	1.78222