sky130_osu_sc_12T_ms_ff_1P95_150C.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_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__addf_1	31.25760
sky130_osu_sc_12T_ms__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_12T_ms__addf_1	0.01137	0.01135	0.00868	1.95073	0.86583	1.69373
sky130_osu_sc_12T_ms__addf_l	0.01137	0.01135	0.00868	1.29591	0.86753	1.69373

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addf_1	0.00000	1083.71000	1260.78000
sky130_osu_sc_12T_ms__addf_l	0.00000	1535.33000	2164.03000

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)	0.10093	1.29044	22.85470
	B->CO (RR)	0.10140	1.28052	22.51610
	CI->CO (RR)	0.09426	1.32722	23.53790
	CON->CO (FR)	0.01503	0.51583	9.20533
sky130_osu_sc_12T_ms__addf_1	A->CO (RR)	0.10222	1.19414	18.12130
	B->CO (RR)	0.10277	1.19332	18.10030
	CI->CO (RR)	0.09550	1.23178	18.83470
	CON->CO (FR)	0.01807	0.56702	9.10176

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)	0.12402	1.54571	27.40340
	B->CO (FF)	0.11094	1.47396	26.12210
	CI->CO (FF)	0.10928	1.58141	28.19890
	CON->CO (RF)	0.01693	0.51464	9.23198
sky130_osu_sc_12T_ms__addf_1	A->CO (FF)	0.12095	1.36146	20.59970
	B->CO (FF)	0.10569	1.30695	19.94750
	CI->CO (FF)	0.10618	1.39833	21.41540
	CON->CO (RF)	0.01848	0.52440	8.40357

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)	0.09560	0.61933	7.84563
	B->CON (FR)	0.08047	0.60335	7.94005
	CI->CON (FR)	0.08088	0.65720	8.68494
sky130_osu_sc_12T_ms__addf_l	A->CON (FR)	0.09090	0.61546	7.85229
	B->CON (FR)	0.07641	0.60004	7.94622
	CI->CON (FR)	0.07616	0.65335	8.69045

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)	0.07498	0.50035	6.35752
	B->CON (RF)	0.07565	0.52298	6.75504
	CI->CON (RF)	0.06828	0.54020	7.11275
sky130_osu_sc_12T_ms__addf_l	A->CON (RF)	0.07227	0.49818	6.36394
	B->CON (RF)	0.07304	0.52092	6.76121
	CI->CON (RF)	0.06556	0.53802	7.11926

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)	0.18363	1.36839	21.08780
	B->S (-R)	0.19293	1.34397	20.09960
	CI->S (-R)	0.16789	1.40242	21.89410
	CON->S (RR)	0.05508	0.47648	6.81789
sky130_osu_sc_12T_ms__addf_l	A->S (-R)	0.17737	1.36340	21.08280
	B->S (-R)	0.18665	1.33935	20.09620
	CI->S (-R)	0.16158	1.39754	21.88870
	CON->S (RR)	0.05510	0.47647	6.81760

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)	0.16788	1.21977	18.29560
	B->S (-F)	0.16235	1.17301	17.74240
	CI->S (-F)	0.16284	1.25819	18.99910
	CON->S (FF)	0.06674	0.51835	7.14197
sky130_osu_sc_12T_ms__addf_l	A->S (-F)	0.16351	1.21641	18.29120
	B->S (-F)	0.15842	1.17009	17.73870
	CI->S (-F)	0.15842	1.25480	18.99510
	CON->S (FF)	0.06676	0.51836	7.14110

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	0.01907	0.02704	0.19135
	B	0.02076	0.02809	0.17841
	CI	0.02081	0.02898	0.19167
sky130_osu_sc_12T_ms__addf_l	A	0.01689	0.02311	0.13906
	B	0.01727	0.02307	0.13387
	CI	0.01863	0.02505	0.14050

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.03085	0.04393	0.30375
	B	0.02847	0.03954	0.26826
	CI	0.02937	0.04269	0.30214
sky130_osu_sc_12T_ms__addf_l	A	0.03749	0.04684	0.21216
	B	0.03541	0.04324	0.18838
	CI	0.03615	0.04571	0.21003

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.02373	0.03225	0.16942
	B	0.02222	0.02941	0.15328
	CI	0.02244	0.03116	0.16860
sky130_osu_sc_12T_ms__addf_l	A	0.03136	0.03894	0.16321
	B	0.02939	0.03567	0.14749
	CI	0.03034	0.03811	0.16224

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.01128	0.01633	0.11109
	B	0.01315	0.01835	0.11763
	CI	0.01412	0.01981	0.12016
sky130_osu_sc_12T_ms__addf_l	A	0.01165	0.01691	0.11239
	B	0.01268	0.01769	0.11372
	CI	0.01364	0.01912	0.11590

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.02669	0.03325	0.25542
	B	0.02908	0.03493	0.23271
	CI	0.03015	0.03772	0.23591
sky130_osu_sc_12T_ms__addf_l	A	0.05298	0.05869	0.19771
	B	0.02906	0.03491	0.23267
	CI	0.05557	0.06140	0.18646

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__addf_1	A	0.05336	0.06200	0.25995
	B	0.04630	0.05411	0.23143
	CI	0.04247	0.05100	0.23034
sky130_osu_sc_12T_ms__addf_l	A	0.06573	0.07141	0.26826
	B	0.06353	0.07048	0.24806
	CI	0.06131	0.06792	0.24375

SKY130_OSU_SC_12T_MS__ADDHx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	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	0.00554	0.00589	1.86853	1.91180	1.96908
sky130_osu_sc_12T_ms__addh_l	0.00554	0.00589	1.29076	1.91206	1.32310

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__addh_1	0.00000	1216.91000	1264.38000
sky130_osu_sc_12T_ms__addh_l	0.00000	2119.05000	2164.83000

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)	0.06543	0.49162	7.10393
	B->CO (RR)	0.06809	0.48442	7.19735
sky130_osu_sc_12T_ms__addh_l	A->CO (RR)	0.06585	0.54042	7.19216
	B->CO (RR)	0.06853	0.53205	7.18402

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)	0.05308	0.48271	7.25346
	B->CO (FF)	0.05718	0.50362	7.53065
sky130_osu_sc_12T_ms__addh_l	A->CO (FF)	0.05288	0.49785	6.65922
	B->CO (FF)	0.05681	0.51922	6.94088

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)	0.09066	0.50126	7.01481
	B->CON (RR)	0.09250	0.49405	7.14745
sky130_osu_sc_12T_ms__addh_l	A->CON (RR)	0.08434	0.49390	7.08450
	B->CON (RR)	0.08623	0.48553	7.12747

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)	0.07934	0.50614	7.40588
	B->CON (FF)	0.07678	0.51922	7.62419
sky130_osu_sc_12T_ms__addh_l	A->CON (FF)	0.07379	0.49313	7.30260
	B->CON (FF)	0.07144	0.50528	7.51486

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)	0.10267	1.02688	17.17770
	B->S (FR)	0.09975	1.04078	17.46620
	CON->S (FR)	0.01616	0.52882	9.44225
sky130_osu_sc_12T_ms__addh_l	A->S (FR)	0.09996	0.95763	13.71030
	B->S (FR)	0.09708	0.97000	13.94310
	CON->S (FR)	0.01869	0.57587	9.28951

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)	0.11450	1.04450	17.23350
	B->S (RF)	0.11634	1.03626	17.33310
	CON->S (RF)	0.01665	0.51610	9.32304
sky130_osu_sc_12T_ms__addh_l	A->S (RF)	0.10944	0.95187	13.46190
	B->S (RF)	0.11133	0.94220	13.45980
	CON->S (RF)	0.01801	0.53023	8.55854

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	0.01735	0.02186	0.11041
	B	0.00000	0.00000	0.00000
	B	0.01682	0.02177	0.13088
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.02468	0.02875	0.11038
	B	0.00000	0.00000	0.00000
	B	0.02413	0.02850	0.12517

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	0.01753	0.02283	0.13082
	B	0.00000	0.00000	0.00000
	B	0.01931	0.02561	0.14302
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.02318	0.02798	0.12366
	B	0.00000	0.00000	0.00000
	B	0.02493	0.03057	0.13399

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	0.01735	0.02186	0.11073
	B	0.00000	0.00000	0.00000
	B	0.01683	0.02180	0.13117
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.02461	0.02866	0.11116
	B	0.00000	0.00000	0.00000
	B	0.02408	0.02846	0.12592

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	0.01757	0.02290	0.13125
	B	0.00000	0.00000	0.00000
	B	0.01936	0.02555	0.14353
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.02440	0.02930	0.12909
	B	0.00000	0.00000	0.00000
	B	0.02618	0.03198	0.14034

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	0.02088	0.02620	0.13574
	B	0.00000	0.00000	0.00000
	B	0.02302	0.02934	0.14888
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.02846	0.03325	0.12943
	B	0.00000	0.00000	0.00000
	B	0.03041	0.03607	0.14010

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	0.02025	0.02476	0.11542
	B	0.00000	0.00000	0.00000
	B	0.01969	0.02468	0.13552
sky130_osu_sc_12T_ms__addh_l	A	0.00000	0.00000	0.00000
	A	0.02582	0.02989	0.11184
	B	0.00000	0.00000	0.00000
	B	0.02524	0.02964	0.12665

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)	2.91381	2.81009	1.20948
sky130_osu_sc_12T_ms__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	2.92106	2.81735	1.21719

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)	2.91387	2.81548	1.31490
sky130_osu_sc_12T_ms__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	2.92111	2.82278	1.32261

SKY130_OSU_SC_12T_MS__AND2x

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__and2_1	0.00298	0.00311	1.85285
sky130_osu_sc_12T_ms__and2_2	0.00298	0.00311	3.65879
sky130_osu_sc_12T_ms__and2_4	0.00298	0.00311	6.97090
sky130_osu_sc_12T_ms__and2_6	0.00301	0.00311	10.43484
sky130_osu_sc_12T_ms__and2_8	0.00298	0.00312	13.63928
sky130_osu_sc_12T_ms__and2_l	0.00227	0.00236	1.27719

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__and2_1	0.00000	526.94900	841.57300
sky130_osu_sc_12T_ms__and2_2	0.00000	842.73900	844.08600
sky130_osu_sc_12T_ms__and2_4	0.00000	1474.09000	1683.49000
sky130_osu_sc_12T_ms__and2_6	0.00000	2105.40000	2523.96000
sky130_osu_sc_12T_ms__and2_8	0.00000	2736.47000	3364.20000
sky130_osu_sc_12T_ms__and2_l	0.00000	1652.96000	2630.73000

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)	0.04957	0.45560	7.10760
	B->Y (RR)	0.05333	0.43655	6.66703
sky130_osu_sc_12T_ms__and2_2	A->Y (RR)	0.05724	0.40470	7.13962
	B->Y (RR)	0.06109	0.38316	6.66862
sky130_osu_sc_12T_ms__and2_4	A->Y (RR)	0.08092	0.39771	7.13951
	B->Y (RR)	0.08481	0.37386	6.66288
sky130_osu_sc_12T_ms__and2_6	A->Y (RR)	0.10594	0.41693	7.30474
	B->Y (RR)	0.10975	0.39268	6.82634
sky130_osu_sc_12T_ms__and2_8	A->Y (RR)	0.13007	0.44166	7.39521
	B->Y (RR)	0.13397	0.41557	6.90129
sky130_osu_sc_12T_ms__and2_l	A->Y (RR)	0.05352	0.51607	7.26301
	B->Y (RR)	0.05729	0.49254	6.79623

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)	0.04377	0.43895	6.71283
	B->Y (FF)	0.04427	0.44450	6.79095
sky130_osu_sc_12T_ms__and2_2	A->Y (FF)	0.04873	0.38372	6.71774
	B->Y (FF)	0.04910	0.39013	6.82924
sky130_osu_sc_12T_ms__and2_4	A->Y (FF)	0.06811	0.37401	6.69296
	B->Y (FF)	0.06705	0.37616	6.81115
sky130_osu_sc_12T_ms__and2_6	A->Y (FF)	0.08926	0.39304	6.83803
	B->Y (FF)	0.08658	0.39274	6.95627
sky130_osu_sc_12T_ms__and2_8	A->Y (FF)	0.10949	0.41443	6.82719
	B->Y (FF)	0.10551	0.41081	6.94019
sky130_osu_sc_12T_ms__and2_l	A->Y (FF)	0.04456	0.45679	6.21647
	B->Y (FF)	0.04746	0.47367	6.43663

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	0.02598	0.03927	0.29204
	B	0.00000	0.00000	0.00000
	B	0.02573	0.03614	0.24199
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.03076	0.04360	0.30198
	B	0.00000	0.00000	0.00000
	B	0.03051	0.04056	0.24877
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.04340	0.05406	0.31896
	B	0.00000	0.00000	0.00000
	B	0.04314	0.05111	0.26016
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.06233	0.06822	0.34073
	B	0.00000	0.00000	0.00000
	B	0.06215	0.06407	0.30975
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.08513	0.08396	0.36330
	B	0.00000	0.00000	0.00000
	B	0.08495	0.07825	0.28593
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.07282	0.08399	0.29701
	B	0.00000	0.00000	0.00000
	B	0.07218	0.08163	0.27275

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	0.01969	0.03344	0.26706
	B	0.00000	0.00000	0.00000
	B	0.02091	0.03455	0.26632
sky130_osu_sc_12T_ms__and2_2	A	0.00000	0.00000	0.00000
	A	0.03372	0.04657	0.27782
	B	0.00000	0.00000	0.00000
	B	0.03487	0.04770	0.27700
sky130_osu_sc_12T_ms__and2_4	A	0.00000	0.00000	0.00000
	A	0.06613	0.07453	0.29890
	B	0.00000	0.00000	0.00000
	B	0.06677	0.07558	0.29740
sky130_osu_sc_12T_ms__and2_6	A	0.00000	0.00000	0.00000
	A	0.10349	0.10475	0.32193
	B	0.00000	0.00000	0.00000
	B	0.10340	0.10572	0.31929
sky130_osu_sc_12T_ms__and2_8	A	0.00000	0.00000	0.00000
	A	0.14442	0.13601	0.34464
	B	0.00000	0.00000	0.00000
	B	0.14345	0.13606	0.34078
sky130_osu_sc_12T_ms__and2_l	A	0.00000	0.00000	0.00000
	A	0.03680	0.04891	0.25505
	B	0.00000	0.00000	0.00000
	B	0.03793	0.04996	0.25641

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)	0.00036	0.00033	0.00032
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00402	0.00398	0.00397
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01132	0.01128	0.01127
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01858	0.01855	0.01853
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.02592	0.02589	0.02587
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00920	0.00918	0.00916

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)	0.00703	0.00705	0.00702
sky130_osu_sc_12T_ms__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01068	0.01071	0.01069
sky130_osu_sc_12T_ms__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01801	0.01804	0.01802
sky130_osu_sc_12T_ms__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.02537	0.02539	0.02538
sky130_osu_sc_12T_ms__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.03266	0.03268	0.03267
sky130_osu_sc_12T_ms__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.01393	0.01396	0.01395

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)	0.00054	0.00053	0.00053
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00418	0.00414	0.00418
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01148	0.01147	0.01147
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01877	0.01876	0.01877
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.02606	0.02605	0.02607
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00930	0.00928	0.00930

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)	0.00702	0.00690	0.00685
sky130_osu_sc_12T_ms__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01069	0.01056	0.01051
sky130_osu_sc_12T_ms__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01801	0.01789	0.01784
sky130_osu_sc_12T_ms__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.02534	0.02522	0.02516
sky130_osu_sc_12T_ms__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.03266	0.03255	0.03249
sky130_osu_sc_12T_ms__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.01394	0.01385	0.01382

SKY130_OSU_SC_12T_MS__AOI21

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00276	0.00292	0.00287	0.77554

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi21_l	0.00000	235.22500	528.77500

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)	0.04950	0.56933	7.46551
	A1->Y (FR)	0.03823	0.51470	6.86997
	B0->Y (FR)	0.03716	0.61920	8.49904

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)	0.03870	0.43472	5.68688
	A1->Y (RF)	0.03557	0.46542	6.23262
	B0->Y (RF)	0.02224	0.43531	5.99564

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	0.00844	0.01308	0.11101
	A1	0.00000	0.00000	0.00000
	A1	0.00701	0.01152	0.10531
	B0	0.00495	0.01126	0.11818

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	0.01182	0.01491	0.08571
	A1	0.00000	0.00000	0.00000
	A1	0.01237	0.01605	0.09100
	B0	0.00734	0.01175	0.09058

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)	-0.00108	-0.00157	0.00053
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00091	0.00088	0.00089
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00272	-0.00274	-0.00272

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)	0.00643	0.00640	0.00595
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00640	0.00640	0.00639
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00298	0.00284	0.00281

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)	-0.00105	-0.00155	0.00054
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00090	0.00085	0.00088
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00301	-0.00302	-0.00304

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)	0.00645	0.00640	0.00596
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00640	0.00645	0.00639
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00308	0.00315	0.00310

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)	-0.00073	-0.00073	0.00017

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)	0.00664	0.00650	0.00435

SKY130_OSU_SC_12T_MS__AOI22

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00276	0.00292	0.00304	0.00286	0.76151

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__aoi22_l	0.00000	263.75800	830.87600

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)	0.06338	0.58359	7.44765
	A1->Y (FR)	0.05627	0.57188	7.35867
	B0->Y (FR)	0.03899	0.62104	8.41877
	B1->Y (FR)	0.04641	0.63422	8.52293

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)	0.05006	0.44512	5.64909
	A1->Y (RF)	0.04683	0.47523	6.18392
	B0->Y (RF)	0.02509	0.45063	6.14058
	B1->Y (RF)	0.02898	0.42044	5.59636

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	0.01035	0.01497	0.11795
	A1	0.00893	0.01343	0.11144
	B0	0.00538	0.01158	0.11866
	B1	0.00685	0.01278	0.11762

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__aoi22_l	A0	0.01409	0.01720	0.09248
	A1	0.01465	0.01828	0.09603
	B0	0.01599	0.01990	0.09161
	B1	0.01529	0.01860	0.08587

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)	-0.00064	-0.00110	0.00344
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00449	0.00444	0.00447
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00271	-0.00273	-0.00272
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00271	-0.00273	-0.00272

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)	0.01001	0.00988	0.00877
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00998	0.01000	0.00996
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00298	0.00284	0.00281
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00299	0.00284	0.00281

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)	-0.00063	-0.00108	0.00345
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00446	0.00441	0.00445
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00299	-0.00301	-0.00303
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00300	-0.00300	-0.00303

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)	0.01004	0.00993	0.00879
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00998	0.01002	0.00996
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00307	0.00311	0.00309
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00308	0.00312	0.00309

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)	-0.00066	-0.00067	-0.00003
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00365	0.00364	0.00366
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00313	-0.00315	-0.00317
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00313	-0.00315	-0.00317

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)	0.00681	0.00668	0.00459
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00579	0.00579	0.00557
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00321	0.00328	0.00323
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00321	0.00321	0.00322

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)	-0.00069	-0.00068	-0.00005
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00364	0.00363	0.00365
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00286	-0.00287	-0.00286
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00286	-0.00287	-0.00287

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)	0.00682	0.00669	0.00460
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00580	0.00580	0.00559
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00312	0.00300	0.00296
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00311	0.00301	0.00296

SKY130_OSU_SC_12T_MS__BUFx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00312	1.74393
sky130_osu_sc_12T_ms__buf_2	0.00312	3.53126
sky130_osu_sc_12T_ms__buf_4	0.00312	6.99943
sky130_osu_sc_12T_ms__buf_6	0.00082	1.80000
sky130_osu_sc_12T_ms__buf_8	0.00313	13.61588
sky130_osu_sc_12T_ms__buf_l	0.00233	1.27883

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__buf_1	0.00000	422.73000	423.02100
sky130_osu_sc_12T_ms__buf_2	0.00000	634.30600	843.65400
sky130_osu_sc_12T_ms__buf_4	0.00000	1057.28000	1684.62000
sky130_osu_sc_12T_ms__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_ms__buf_8	0.00000	1903.07000	3366.30000
sky130_osu_sc_12T_ms__buf_l	0.00000	1327.56000	1329.19000

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)**	0.03992	0.41665	6.35917
sky130_osu_sc_12T_ms__buf_2	**A->Y (RR)**	0.04360	0.34991	6.22235
sky130_osu_sc_12T_ms__buf_4	**A->Y (RR)**	0.05976	0.33710	6.33255
sky130_osu_sc_12T_ms__buf_8	**A->Y (RR)**	0.09417	0.36893	6.46112
sky130_osu_sc_12T_ms__buf_l	**A->Y (RR)**	0.04192	0.46220	6.50274

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)**	0.04016	0.43008	6.58277
sky130_osu_sc_12T_ms__buf_2	**A->Y (FF)**	0.04545	0.38522	6.80138
sky130_osu_sc_12T_ms__buf_4	**A->Y (FF)**	0.06459	0.38006	7.01494
sky130_osu_sc_12T_ms__buf_8	**A->Y (FF)**	0.10537	0.41752	7.10726
sky130_osu_sc_12T_ms__buf_l	**A->Y (FF)**	0.04289	0.47065	6.58907

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	0.01451	0.02539	0.21441
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.01830	0.02975	0.22392
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.02871	0.04061	0.24047
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.06002	0.06734	0.27703
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.03724	0.04908	0.26392

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	0.01862	0.03251	0.26936
sky130_osu_sc_12T_ms__buf_2	A	0.00000	0.00000	0.00000
	A	0.03242	0.04548	0.28060
sky130_osu_sc_12T_ms__buf_4	A	0.00000	0.00000	0.00000
	A	0.06526	0.07400	0.30160
sky130_osu_sc_12T_ms__buf_8	A	0.00000	0.00000	0.00000
	A	0.14305	0.13479	0.34375
sky130_osu_sc_12T_ms__buf_l	A	0.00000	0.00000	0.00000
	A	0.03684	0.04981	0.27041

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	-0.00082	-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	0.00082	0.00076

SKY130_OSU_SC_12T_MS__DFFNRx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

INPUT			OUTPUT	
D	RN	CK	Q	QN
0	1	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	0.00289	0.00284	0.00907	1.88068	1.84467
sky130_osu_sc_12T_ms__dffnr_l	0.00289	0.00284	0.00907	1.31217	1.29589

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffnr_1	0.00000	2039.48000	3191.61000
sky130_osu_sc_12T_ms__dffnr_l	0.00000	2944.56000	4097.53000

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)	0.22162	1.11797	15.93780
	QN->Q (FR)	0.01771	0.59196	10.47950
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FR)	0.22078	1.19664	15.30610
	QN->Q (FR)	0.01966	0.61955	9.98441

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)	0.14724	1.04108	16.00840
	QN->Q (RF)	0.01827	0.55722	9.85954
	RN->Q (FF)	0.14508	1.05075	16.14380
sky130_osu_sc_12T_ms__dffnr_l	CK->Q (FF)	0.15032	1.13972	15.58690
	QN->Q (RF)	0.01937	0.56452	9.08704
	RN->Q (FF)	0.14828	1.14916	15.72310

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)	0.12625	0.53924	6.70361
	RN->QN (FR)	0.12403	0.54895	6.84358
sky130_osu_sc_12T_ms__dffnr_l	CK->QN (FR)	0.12698	0.59206	6.79495
	RN->QN (FR)	0.12483	0.60152	6.93152

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)**	0.20009	0.63419	6.97358
sky130_osu_sc_12T_ms__dffnr_l	**CK->QN (FF)**	0.19598	0.64992	6.52990

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)	-0.07758	-0.15959	0.18500
	setup	CK (F)	0.11478	0.17531	2.80803
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.07887	-0.15959	0.17211
	setup	CK (F)	0.11483	0.17531	2.80820

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)	-0.04201	-0.03858	0.08433
	setup	CK (F)	0.10909	0.13685	0.38532
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.04344	-0.04013	0.08412
	setup	CK (F)	0.10862	0.13621	0.38952

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)	-0.07758	-0.15959	0.18500
	setup	CK (F)	0.11478	0.17531	2.80803
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.07887	-0.15959	0.17211
	setup	CK (F)	0.11483	0.17531	2.80820

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)	-0.04201	-0.03858	0.08433
	setup	CK (F)	0.10909	0.13685	0.38532
sky130_osu_sc_12T_ms__dffnr_l	hold	CK (F)	-0.04344	-0.04013	0.08412
	setup	CK (F)	0.10862	0.13621	0.38952

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)	0.09407	0.09104	-0.14633
	removal	CK (F)	-0.07156	-0.07618	0.25111
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.09419	0.09108	-0.14570
	removal	CK (F)	-0.07156	-0.07618	0.25111

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)	0.09407	0.09104	-0.14633
	removal	CK (F)	-0.07156	-0.07618	0.25111
sky130_osu_sc_12T_ms__dffnr_l	recovery	CK (F)	0.09419	0.09108	-0.14570
	removal	CK (F)	-0.07156	-0.07618	0.25111

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 ()	0.08515	0.41260	13.33370
	min_pulse_width	RN ()	0.08515	0.41260	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	RN ()	0.08515	0.41260	13.33370
	min_pulse_width	RN ()	0.08515	0.41260	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 ()	0.10698	0.41260	13.33370
	min_pulse_width	CK ()	0.14129	0.41260	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.10698	0.41260	13.33370
	min_pulse_width	CK ()	0.14129	0.41260	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 ()	0.10075	0.41260	13.33370
	min_pulse_width	CK ()	0.07268	0.41260	13.33370
sky130_osu_sc_12T_ms__dffnr_l	min_pulse_width	CK ()	0.09763	0.41260	13.33370
	min_pulse_width	CK ()	0.06956	0.41260	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	0.04440	0.05158	0.19989
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.05769	0.06568	0.22641

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	0.06368	0.07585	0.26557
	RN	-0.00113	-0.09394	-1.78747
	RN	0.06893	0.07543	0.21322
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.07480	0.08806	0.29997
	RN	-0.00113	-0.07565	-1.24637
	RN	0.07998	0.08768	0.24646

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	0.05469	0.06676	0.25605
	RN	-0.00113	-0.09286	-1.75297
	RN	0.05952	0.06606	0.20182
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.06580	0.07903	0.29048
	RN	-0.00113	-0.07508	-1.23081
	RN	0.07057	0.07824	0.23647

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	0.03698	0.04410	0.19095
sky130_osu_sc_12T_ms__dffnr_l	CK	0.00000	0.00000	0.00000
	CK	0.04509	0.05308	0.21519

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)	0.02908	0.04103	0.30060
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.02882	0.03905	0.26488
	!CK	0.00000	0.00000	0.00000
	!CK	0.01090	0.01050	0.01292
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)	0.03694	0.04889	0.30847
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.03671	0.04693	0.27278
	!CK	0.00000	0.00000	0.00000
	!CK	0.01876	0.01837	0.02079

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)	0.04158	0.05377	0.30681
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.01894	0.03107	0.27254
	!CK	0.00000	0.00000	0.00000
	!CK	0.01936	0.01931	0.01885
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)	0.04945	0.06163	0.31468
	(CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN)	0.02682	0.03896	0.28043
	!CK	0.00000	0.00000	0.00000
	!CK	0.02722	0.02718	0.02671

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)	0.03703	0.05338	0.38030
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.03155	0.04580	0.33271
sky130_osu_sc_12T_ms__dffnr_l	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.04492	0.06127	0.38818
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.03943	0.05369	0.34060

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)	0.04382	0.06034	0.38399
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.01793	0.03452	0.33889
sky130_osu_sc_12T_ms__dffnr_1	(CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * D * !Q * QN)	0.05171	0.06822	0.39188
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !D * !Q * QN) + (!CK * !Q * QN)	0.02582	0.04240	0.34677

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)	0.01631	0.03092	0.33024
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03752	0.06318	0.49004
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02870	0.05472	0.57334
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03866	0.05555	0.50531
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02727	0.04177	0.34218
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02419	0.03879	0.33813
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.04541	0.07106	0.49792
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03659	0.06261	0.58122
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04654	0.06342	0.51322
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03515	0.04965	0.35007

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)	0.02730	0.04382	0.34684
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02386	0.05339	0.59052
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03959	0.05566	0.35928
sky130_osu_sc_12T_ms__dffnr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.03516	0.05167	0.35472
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.03174	0.06128	0.59840
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.04747	0.06355	0.36716

SKY130_OSU_SC_12T_MS__DFFRx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00289	0.00284	0.00869	1.87668	1.84799
sky130_osu_sc_12T_ms__dffr_l	0.00289	0.00284	0.00867	1.30749	1.29732

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffr_1	0.00000	2039.46000	3192.88000
sky130_osu_sc_12T_ms__dffr_l	0.00000	2944.54000	4098.80000

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)	0.18014	1.03864	15.18630
	QN->Q (FR)	0.01771	0.59149	10.46440
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RR)	0.17917	1.11682	14.54730
	QN->Q (FR)	0.01966	0.61856	9.96038

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)	0.19300	1.06187	15.74430
	QN->Q (RF)	0.01827	0.55676	9.84518
	RN->Q (FF)	0.14526	1.05029	16.11360
sky130_osu_sc_12T_ms__dffr_l	CK->Q (RF)	0.19604	1.16032	15.30910
	QN->Q (RF)	0.01937	0.56382	9.06537
	RN->Q (FF)	0.14846	1.14768	15.66890

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)	0.17202	0.56159	6.48368
	RN->QN (FR)	0.12416	0.54978	6.85614
sky130_osu_sc_12T_ms__dffr_l	CK->QN (RR)	0.17270	0.61491	6.57893
	RN->QN (FR)	0.12501	0.60223	6.94004

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)**	0.15862	0.55632	6.26769
sky130_osu_sc_12T_ms__dffr_l	**CK->QN (RF)**	0.15433	0.57160	5.81688

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)	-0.04603	-0.04372	-0.02141
	setup	CK (R)	0.13875	0.16720	6.94805
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.04630	-0.04216	-0.01966
	setup	CK (R)	0.13728	0.16744	4.93944

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)	-0.07246	-0.17434	4.69031
	setup	CK (R)	0.09192	0.18787	3.45026
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.07283	-0.17623	3.93377
	setup	CK (R)	0.09189	0.18787	3.44874

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)	-0.04603	-0.04372	-0.02141
	setup	CK (R)	0.13875	0.16720	6.94805
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.04630	-0.04216	-0.01966
	setup	CK (R)	0.13728	0.16744	4.93944

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)	-0.07246	-0.17434	4.69031
	setup	CK (R)	0.09192	0.18787	3.45026
sky130_osu_sc_12T_ms__dffr_l	hold	CK (R)	-0.07283	-0.17623	3.93377
	setup	CK (R)	0.09189	0.18787	3.44874

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)	0.11787	0.16238	2.63703
	removal	CK (R)	-0.02679	-0.03130	-0.06177
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.11828	0.16207	3.65013
	removal	CK (R)	-0.02679	-0.03130	-0.06177

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)	0.11787	0.16238	2.63703
	removal	CK (R)	-0.02679	-0.03130	-0.06177
sky130_osu_sc_12T_ms__dffr_l	recovery	CK (R)	0.11828	0.16207	3.65013
	removal	CK (R)	-0.02679	-0.03130	-0.06177

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 ()	0.08515	0.41260	13.33370
	min_pulse_width	RN ()	0.08827	0.41260	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	RN ()	0.08515	0.41260	13.33370
	min_pulse_width	RN ()	0.08515	0.41260	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 ()	0.09139	0.41260	13.33370
	min_pulse_width	CK ()	0.10075	0.41260	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.08827	0.41260	13.33370
	min_pulse_width	CK ()	0.09763	0.41260	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 ()	0.17559	0.41260	13.33370
	min_pulse_width	CK ()	0.07580	0.41260	13.33370
sky130_osu_sc_12T_ms__dffr_l	min_pulse_width	CK ()	0.17559	0.41260	13.33370
	min_pulse_width	CK ()	0.07580	0.41260	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	0.04246	0.05396	0.24669
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.05534	0.06759	0.27478

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	0.06354	0.06924	0.19795
	RN	-0.00113	-0.09382	-1.78367
	RN	0.06169	0.06821	0.20592
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.07423	0.08107	0.23281
	RN	-0.00113	-0.07549	-1.24193
	RN	0.07301	0.08072	0.24010

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	0.05338	0.05908	0.18784
	RN	-0.00113	-0.09296	-1.75613
	RN	0.05379	0.06034	0.19634
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.06436	0.07121	0.22240
	RN	-0.00113	-0.07513	-1.23218
	RN	0.06482	0.07251	0.23057

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	0.03311	0.04456	0.23679
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.04074	0.05297	0.25986

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	0.01477	0.01436	0.01679
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02600	0.03791	0.29750
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02624	0.03642	0.26228
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.02263	0.02222	0.02465
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03386	0.04578	0.30537
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.03413	0.04431	0.27017

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	0.02278	0.02274	0.02226
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.03743	0.04964	0.30266
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01426	0.02643	0.26793
sky130_osu_sc_12T_ms__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.03064	0.03061	0.03013
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.04529	0.05750	0.31053
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.02215	0.03431	0.27582

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)	0.03156	0.04582	0.33273
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.03289	0.04923	0.37617
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)	0.03945	0.05371	0.34062
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04078	0.05712	0.38406

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)	0.01794	0.03453	0.33890
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04068	0.05719	0.38085
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)	0.02583	0.04242	0.34678
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.04856	0.06508	0.38873

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)	0.01618	0.03088	0.33047
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01540	0.03165	0.37125
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.02692	0.04180	0.34218
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02404	0.03873	0.33834
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02329	0.03953	0.37913
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03480	0.04962	0.35007

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)	0.02695	0.04352	0.34676
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.05154	0.06843	0.48925
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.04377	0.05965	0.38468
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.04775	0.07697	0.54357
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.03953	0.05566	0.35943
sky130_osu_sc_12T_ms__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.03483	0.05139	0.35465
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.05943	0.07632	0.49713
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.05165	0.06754	0.39256
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.05563	0.08484	0.55146
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.04742	0.06355	0.36731

SKY130_OSU_SC_12T_MS__DFFSRx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00285	0.00286	0.00665	0.00883	1.96872	1.95844
sky130_osu_sc_12T_ms__dffsr_l	0.00285	0.00286	0.00665	0.00883	1.30229	1.30054

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__dffsr_1	0.00000	1694.32000	2327.37000
sky130_osu_sc_12T_ms__dffsr_l	0.00000	2599.17000	3233.30000

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)	0.19093	1.05575	15.60370
	QN->Q (FR)	0.01655	0.56605	10.13220
	RN->Q (RR)	0.15791	1.03941	15.89120
	SN->Q (FR)	0.13741	1.03759	16.06750
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RR)	0.19250	1.12705	14.47790
	QN->Q (FR)	0.01961	0.61777	9.93437
	RN->Q (RR)	0.15948	1.11153	14.74150
	SN->Q (FR)	0.13872	1.10714	14.91650

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)	0.22442	1.10739	16.25850
	QN->Q (RF)	0.01810	0.56706	10.17420
	RN->Q (FF)	0.14694	1.06748	16.69630
sky130_osu_sc_12T_ms__dffsr_l	CK->Q (RF)	0.22898	1.19394	15.28220
	QN->Q (RF)	0.01925	0.56212	9.02979
	RN->Q (FF)	0.15129	1.15461	15.70630

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)	0.20300	0.59461	6.61210
	RN->QN (FR)	0.12586	0.55531	7.04882
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RR)	0.20541	0.65204	6.63341
	RN->QN (FR)	0.12795	0.61240	7.05903

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)	0.17018	0.57713	6.62644
	RN->QN (RF)	0.13741	0.56226	6.89486
	SN->QN (FF)	0.11639	0.55872	7.07289
sky130_osu_sc_12T_ms__dffsr_l	CK->QN (RF)	0.16777	0.58375	5.81704
	RN->QN (RF)	0.13539	0.56937	6.08297
	SN->QN (FF)	0.11434	0.56449	6.25763

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)	-0.04611	-0.04788	-0.02581
	setup	CK (R)	0.14646	0.17652	3.96850
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.04720	-0.04866	-0.01974
	setup	CK (R)	0.14565	0.17591	3.89868

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)	-0.08482	-0.18964	2.88242
	setup	CK (R)	0.10442	0.20174	3.51835
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.08518	-0.18937	2.77650
	setup	CK (R)	0.10448	0.20162	3.51828

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)	-0.04611	-0.04788	-0.02581
	setup	CK (R)	0.14646	0.17652	3.96850
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.04720	-0.04866	-0.01974
	setup	CK (R)	0.14565	0.17591	3.89868

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)	-0.08482	-0.18964	2.88242
	setup	CK (R)	0.10442	0.20174	3.51835
sky130_osu_sc_12T_ms__dffsr_l	hold	CK (R)	-0.08518	-0.18937	2.77650
	setup	CK (R)	0.10448	0.20162	3.51828

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)	0.11165	0.15715	2.95443
	removal	CK (R)	-0.01802	-0.02116	-0.01106
	hold	SN (R)	-0.10853	-0.20211	-0.80986
	setup	SN (R)	0.13286	0.24320	5.36495
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.11462	0.15710	3.07655
	removal	CK (R)	-0.01971	-0.02008	-0.01176
	hold	SN (R)	-0.10734	-0.19619	-0.79408
	setup	SN (R)	0.13143	0.23837	5.43830

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)	0.11165	0.15715	2.95443
	removal	CK (R)	-0.01802	-0.02116	-0.01106
	hold	SN (R)	-0.10853	-0.20348	-0.81046
	hold	SN (R)	-0.11056	-0.20211	-0.80986
	setup	SN (R)	0.13144	0.24003	5.23186
	setup	SN (R)	0.13286	0.24320	5.36495
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.11462	0.15710	3.07655
	removal	CK (R)	-0.01971	-0.02008	-0.01176
	hold	SN (R)	-0.10734	-0.19619	-0.81154
	hold	SN (R)	-0.10829	-0.19619	-0.79408
	setup	SN (R)	0.13143	0.23307	5.23712
	setup	SN (R)	0.13048	0.23837	5.43830

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 ()	0.10075	0.41260	13.33370
	min_pulse_width	RN ()	0.10075	0.41260	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	RN ()	0.10075	0.41260	13.33370
	min_pulse_width	RN ()	0.09763	0.41260	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)	0.03292	0.05672	3.65553
	removal	CK (R)	-0.01882	-0.03899	-0.23506
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.03273	0.05672	3.53252
	removal	CK (R)	-0.01882	-0.03899	-0.23506

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)	0.03292	0.05672	3.65553
	removal	CK (R)	-0.01882	-0.03899	-0.23506
sky130_osu_sc_12T_ms__dffsr_l	recovery	CK (R)	0.03273	0.05672	3.53252
	removal	CK (R)	-0.01882	-0.03899	-0.23506

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 ()	0.11010	0.41260	13.33370
	min_pulse_width	SN ()	0.11322	0.41260	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	SN ()	0.11010	0.41260	13.33370
	min_pulse_width	SN ()	0.10698	0.41260	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 ()	0.09451	0.41260	13.33370
	min_pulse_width	CK ()	0.11634	0.41260	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.09139	0.41260	13.33370
	min_pulse_width	CK ()	0.11322	0.41260	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 ()	0.18183	0.41260	13.33370
	min_pulse_width	CK ()	0.09139	0.41260	13.33370
sky130_osu_sc_12T_ms__dffsr_l	min_pulse_width	CK ()	0.18183	0.41260	13.33370
	min_pulse_width	CK ()	0.09139	0.41260	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	0.04517	0.05610	0.24466
	RN	0.05535	0.06304	0.23181
	SN	-0.00113	-0.09656	-1.87115
	SN	0.04224	0.05081	0.21820
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.05778	0.06951	0.27367
	RN	0.06805	0.07656	0.25861
	SN	-0.00113	-0.07530	-1.23698
	SN	0.05534	0.06475	0.24566

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	0.05225	0.05865	0.20373
	RN	-0.00113	-0.09656	-1.87115
	RN	0.05471	0.06246	0.22543
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.06240	0.06917	0.22350
	RN	-0.00113	-0.07531	-1.23701
	RN	0.06577	0.07388	0.24540

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	0.04406	0.05047	0.19539
	RN	-0.00113	-0.09625	-1.86085
	RN	0.04875	0.05649	0.21853
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.05493	0.06171	0.21545
	RN	-0.00113	-0.07525	-1.23526
	RN	0.05975	0.06787	0.23872

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	0.03661	0.04754	0.23708
	RN	0.04680	0.05446	0.22108
	SN	-0.00113	-0.09625	-1.86130
	SN	0.03697	0.04556	0.21260
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.04325	0.05497	0.25898
	RN	0.05354	0.06202	0.24370
	SN	-0.00113	-0.07524	-1.23530
	SN	0.04462	0.05403	0.23441

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	0.01746	0.01745	0.01746
	(!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)	0.03072	0.04198	0.30137
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01864	0.02893	0.26027
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01950	0.02962	0.25837
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02234	0.03254	0.26238
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.02534	0.02533	0.02534
	(!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)	0.03860	0.04987	0.30926
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02650	0.03679	0.26814
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02738	0.03750	0.26625
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.03023	0.04043	0.27026

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	0.02324	0.02313	0.02308
	(!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)	0.03807	0.04992	0.30370
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02023	0.03175	0.26628
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01583	0.02742	0.26458
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02094	0.03254	0.26839
sky130_osu_sc_12T_ms__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.03113	0.03102	0.03096
	(!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)	0.04595	0.05781	0.31158
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.02810	0.03961	0.27416
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.02371	0.03531	0.27247
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.02883	0.04042	0.27628

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)	0.02445	0.03888	0.32908
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02910	0.04509	0.37009
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)	0.03234	0.04676	0.33697
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03699	0.05298	0.37798

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)	0.01806	0.03448	0.33483
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.03365	0.05014	0.37304
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)	0.02595	0.04237	0.34271
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.04153	0.05802	0.38093

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)	0.00979	0.00976	0.00970
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00344	0.00239	0.00652
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00823	0.00767	0.00975
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02176	0.03098	0.24864
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)	0.01762	0.01760	0.01753
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.01132	0.01027	0.01440
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.01611	0.01555	0.01763
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02960	0.03882	0.25648

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)	0.02375	0.02388	0.02377
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.02227	0.02219	0.02129
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.02410	0.02409	0.02361
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.02713	0.03673	0.26159
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)	0.03165	0.03178	0.03167
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.03015	0.03008	0.02918
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.03199	0.03198	0.03150
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.03503	0.04462	0.26949

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)	0.01612	0.03078	0.33049
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01709	0.03302	0.36879
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02225	0.03810	0.37272
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01949	0.03433	0.33453
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02390	0.05027	0.57282
sky130_osu_sc_12T_ms__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02398	0.03863	0.33838
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02498	0.04091	0.37668
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03014	0.04598	0.38061
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.02738	0.04222	0.34242
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03176	0.05813	0.58079

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)	0.04850	0.06528	0.47840
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.02723	0.04375	0.34714
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.03703	0.05323	0.38167
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.03982	0.05609	0.38580
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.04977	0.07862	0.54825
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.03202	0.04812	0.35170
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02952	0.05847	0.59053
sky130_osu_sc_12T_ms__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.05639	0.07316	0.48629
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.03511	0.05163	0.35505
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.04492	0.06112	0.38956
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.04771	0.06398	0.39365
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.05765	0.08650	0.55617
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.03990	0.05601	0.35958
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.03739	0.06635	0.59845

SKY130_OSU_SC_12T_MS__DFFSx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00287	0.00547	0.00875	1.87018	1.84470
sky130_osu_sc_12T_ms__dffs_l	0.00287	0.00547	0.00875	1.30620	1.29871

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dffs_1	0.00000	2886.09000	6091.73000
sky130_osu_sc_12T_ms__dffs_l	0.00000	3790.30000	6997.69000

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)	0.14607	0.99166	14.94250
	QN->Q (FR)	0.01765	0.58789	10.38430
	SN->Q (FR)	0.10882	1.00914	15.58780
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RR)	0.14743	1.07399	14.35570
	QN->Q (FR)	0.01961	0.61644	9.91641
	SN->Q (FR)	0.11032	1.08882	14.98640

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)	0.21309	1.08604	15.72140
	QN->Q (RF)	0.01820	0.55432	9.79237
sky130_osu_sc_12T_ms__dffs_l	CK->Q (RF)	0.21528	1.18386	15.33120
	QN->Q (RF)	0.01932	0.56224	9.03900

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)	0.19165	0.58673	6.50500
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RR)	0.19153	0.63895	6.62156

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)	0.12582	0.51205	6.08732
	SN->QN (FF)	0.08835	0.52903	6.73676
sky130_osu_sc_12T_ms__dffs_l	CK->QN (RF)	0.12399	0.53121	5.65723
	SN->QN (FF)	0.08667	0.54526	6.29087

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)	-0.03412	-0.03474	0.01914
	setup	CK (R)	0.10994	0.14783	1.68927
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.03483	-0.03659	0.01866
	setup	CK (R)	0.10953	0.14822	1.87156

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)	-0.07643	-0.18089	0.65822
	setup	CK (R)	0.09842	0.19496	3.53490
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.07492	-0.18091	0.68510
	setup	CK (R)	0.09842	0.19496	3.53490

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)	-0.03412	-0.03474	0.01914
	setup	CK (R)	0.10994	0.14783	1.68927
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.03483	-0.03659	0.01866
	setup	CK (R)	0.10953	0.14822	1.87156

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)	-0.07643	-0.18089	0.65822
	setup	CK (R)	0.09842	0.19496	3.53490
sky130_osu_sc_12T_ms__dffs_l	hold	CK (R)	-0.07492	-0.18091	0.68510
	setup	CK (R)	0.09842	0.19496	3.53490

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)	0.03287	0.06440	3.23187
	removal	CK (R)	-0.02161	-0.04608	-0.49228
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.03310	0.06406	3.20121
	removal	CK (R)	-0.02161	-0.04608	-0.49228

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)	0.03287	0.06440	3.23187
	removal	CK (R)	-0.02161	-0.04608	-0.49228
sky130_osu_sc_12T_ms__dffs_l	recovery	CK (R)	0.03310	0.06406	3.20121
	removal	CK (R)	-0.02161	-0.04608	-0.49228

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 ()	0.07580	0.41260	13.33370
	min_pulse_width	SN ()	0.07892	0.41260	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	SN ()	0.07580	0.41260	13.33370
	min_pulse_width	SN ()	0.07268	0.41260	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 ()	0.06956	0.41260	13.33370
	min_pulse_width	CK ()	0.11010	0.41260	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.06644	0.41260	13.33370
	min_pulse_width	CK ()	0.10698	0.41260	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 ()	0.14752	0.41260	13.33370
	min_pulse_width	CK ()	0.08515	0.41260	13.33370
sky130_osu_sc_12T_ms__dffs_l	min_pulse_width	CK ()	0.14752	0.41260	13.33370
	min_pulse_width	CK ()	0.08515	0.41260	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	0.03466	0.04650	0.24054
	SN	-0.00113	-0.09363	-1.77749
	SN	0.03049	0.04153	0.22729
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.04779	0.06036	0.26822
	SN	-0.00113	-0.07544	-1.24069
	SN	0.04399	0.05576	0.25502

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	0.11048	0.11593	0.24502
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.11916	0.12576	0.27693

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	0.09137	0.09682	0.22591
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.10262	0.10924	0.25972

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	0.02743	0.03930	0.23333
	SN	-0.00113	-0.09286	-1.75321
	SN	0.02685	0.03787	0.22386
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.03545	0.04802	0.25523
	SN	-0.00113	-0.07518	-1.23357
	SN	0.03545	0.04722	0.24622

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	0.05018	0.05017	0.05018
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04170	0.05473	0.32878
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01444	0.02497	0.25691
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.05806	0.05806	0.05807
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.04959	0.06261	0.33667
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02230	0.03283	0.26479

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	0.05605	0.05594	0.05588
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.06749	0.07910	0.32965
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01579	0.02755	0.26261
sky130_osu_sc_12T_ms__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.06394	0.06383	0.06377
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.07538	0.08698	0.33754
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.02365	0.03541	0.27048

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)	0.00787	0.00782	0.00783
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.03589	0.04437	0.24970
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)	0.01572	0.01566	0.01567
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.04374	0.05218	0.25755

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)	0.01839	0.01836	0.01829
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01832	0.02992	0.25931
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)	0.02627	0.02624	0.02617
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.02620	0.03780	0.26719

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)	0.01249	0.02720	0.32710
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.05225	0.06712	0.36778
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01977	0.04650	0.57018
sky130_osu_sc_12T_ms__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02035	0.03506	0.33500
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.06013	0.07501	0.37567
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02763	0.05436	0.57808

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)	0.05956	0.07721	0.51021
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.02327	0.03985	0.34340
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.06071	0.08928	0.54961
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.06470	0.08083	0.38485
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02477	0.05416	0.58717
sky130_osu_sc_12T_ms__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.06745	0.08509	0.51810
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.03115	0.04772	0.35131
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.06859	0.09715	0.55753
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.07258	0.08872	0.39274
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.03264	0.06203	0.59508

SKY130_OSU_SC_12T_MS__DFFx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

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	0.00302	0.00855	1.62094
sky130_osu_sc_12T_ms__dff_l	0.00302	0.00855	1.20386

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__dff_1	0.00000	1479.06000	1870.25000
sky130_osu_sc_12T_ms__dff_l	0.00000	2381.45000	2770.30000

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)**	0.12430	0.51383	5.95792
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RR)**	0.12509	0.56915	6.17512

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)**	0.17988	0.54533	5.77114
sky130_osu_sc_12T_ms__dff_l	**CK->Q (RF)**	0.18149	0.57865	5.68176

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)	-0.03025	-0.03190	0.00546
	setup	CK (R)	0.09094	0.13384	2.49587
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.03025	-0.03190	0.00925
	setup	CK (R)	0.09102	0.13003	2.45463

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)	-0.06681	-0.17751	1.39374
	setup	CK (R)	0.08200	0.19142	3.54740
sky130_osu_sc_12T_ms__dff_l	hold	CK (R)	-0.06700	-0.17740	1.34302
	setup	CK (R)	0.08197	0.19142	3.54638

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 ()	0.06021	0.41260	13.33370
	min_pulse_width	CK ()	0.09763	0.41260	13.33370
sky130_osu_sc_12T_ms__dff_l	min_pulse_width	CK ()	0.06021	0.41260	13.33370
	min_pulse_width	CK ()	0.09451	0.41260	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 ()**	0.12881	0.41260	13.33370
	min_pulse_width	**CK ()**	0.06644	0.41260	13.33370
sky130_osu_sc_12T_ms__dff_l	**min_pulse_width**	**CK ()**	0.12881	0.41260	13.33370
	min_pulse_width	**CK ()**	0.06644	0.41260	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	0.05901	0.08445	0.50062
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.08121	0.10629	0.51613

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	0.05934	0.07468	0.40628
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.07609	0.09129	0.41847

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	0.01109	0.01069	0.01313
	!CK	0.00000	0.00000	0.00000
	!CK	0.02147	0.03366	0.29804
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01893	0.01853	0.02096
	!CK	0.00000	0.00000	0.00000
	!CK	0.02935	0.04153	0.30592

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	0.01908	0.01905	0.01857
	!CK	0.00000	0.00000	0.00000
	!CK	0.03011	0.04259	0.30362
sky130_osu_sc_12T_ms__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02692	0.02688	0.02640
	!CK	0.00000	0.00000	0.00000
	!CK	0.03799	0.05046	0.31149

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)	0.01246	0.02718	0.32708
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01393	0.02885	0.32927
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.02029	0.03502	0.33494
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.02180	0.03673	0.33715

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)	0.02324	0.03983	0.34337
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.03925	0.05662	0.47966
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.04232	0.07220	0.54968
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.02625	0.04243	0.34622
sky130_osu_sc_12T_ms__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.03108	0.04767	0.35124
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.04712	0.06450	0.48754
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.05016	0.08005	0.55759
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.03413	0.05030	0.35410

SKY130_OSU_SC_12T_MS__INVx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00288	1.58676
sky130_osu_sc_12T_ms__inv_10	0.02583	15.55674
sky130_osu_sc_12T_ms__inv_2	0.00536	3.19505
sky130_osu_sc_12T_ms__inv_3	0.00794	4.77176
sky130_osu_sc_12T_ms__inv_4	0.01045	6.30711
sky130_osu_sc_12T_ms__inv_6	0.01565	9.37695
sky130_osu_sc_12T_ms__inv_8	0.02074	12.41376
sky130_osu_sc_12T_ms__inv_l	0.00228	1.08681

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__inv_1	0.00000	211.22300	419.93800
sky130_osu_sc_12T_ms__inv_10	0.00000	2111.38000	4198.20000
sky130_osu_sc_12T_ms__inv_2	0.00000	422.44000	839.96900
sky130_osu_sc_12T_ms__inv_3	0.00000	633.56800	1259.72000
sky130_osu_sc_12T_ms__inv_4	0.00000	844.78900	1679.76000
sky130_osu_sc_12T_ms__inv_6	0.00000	1267.09000	2519.44000
sky130_osu_sc_12T_ms__inv_8	0.00000	1689.35000	3359.05000
sky130_osu_sc_12T_ms__inv_l	0.00000	661.19400	1320.48000

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)**	0.01678	0.51584	8.69391
sky130_osu_sc_12T_ms__inv_10	**A->Y (FR)**	0.02097	0.30039	8.57063
sky130_osu_sc_12T_ms__inv_2	**A->Y (FR)**	0.01291	0.42134	8.48436
sky130_osu_sc_12T_ms__inv_3	**A->Y (FR)**	0.01393	0.38894	8.61621
sky130_osu_sc_12T_ms__inv_4	**A->Y (FR)**	0.01388	0.35731	8.46906
sky130_osu_sc_12T_ms__inv_6	**A->Y (FR)**	0.01566	0.32674	8.46570
sky130_osu_sc_12T_ms__inv_8	**A->Y (FR)**	0.01805	0.30834	8.46437
sky130_osu_sc_12T_ms__inv_l	**A->Y (FR)**	0.01969	0.55538	8.48948

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)**	0.01702	0.47451	8.00183
sky130_osu_sc_12T_ms__inv_10	**A->Y (RF)**	0.02210	0.27940	8.21497
sky130_osu_sc_12T_ms__inv_2	**A->Y (RF)**	0.01344	0.39751	8.07971
sky130_osu_sc_12T_ms__inv_3	**A->Y (RF)**	0.01458	0.36754	8.26573
sky130_osu_sc_12T_ms__inv_4	**A->Y (RF)**	0.01436	0.33822	8.17676
sky130_osu_sc_12T_ms__inv_6	**A->Y (RF)**	0.01677	0.30897	8.19268
sky130_osu_sc_12T_ms__inv_8	**A->Y (RF)**	0.01925	0.29057	8.18845
sky130_osu_sc_12T_ms__inv_l	**A->Y (RF)**	0.01857	0.48848	7.44861

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	0.00460	0.01172	0.11385
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.04099	0.14313	1.08628
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.00804	0.02464	0.22454
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.01235	0.03817	0.32760
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.01581	0.05266	0.44094
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.02380	0.08154	0.65896
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.03205	0.11132	0.87490
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.00364	0.01003	0.11031

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	0.00913	0.01384	0.08136
sky130_osu_sc_12T_ms__inv_10	A	0.00000	0.00000	0.00000
	A	0.09337	0.16806	0.78949
sky130_osu_sc_12T_ms__inv_2	A	0.00000	0.00000	0.00000
	A	0.01759	0.02886	0.16157
sky130_osu_sc_12T_ms__inv_3	A	0.00000	0.00000	0.00000
	A	0.02747	0.04639	0.23722
sky130_osu_sc_12T_ms__inv_4	A	0.00000	0.00000	0.00000
	A	0.03578	0.06211	0.31923
sky130_osu_sc_12T_ms__inv_6	A	0.00000	0.00000	0.00000
	A	0.05383	0.09568	0.47736
sky130_osu_sc_12T_ms__inv_8	A	0.00000	0.00000	0.00000
	A	0.07273	0.13339	0.63593
sky130_osu_sc_12T_ms__inv_l	A	0.00000	0.00000	0.00000
	A	0.02925	0.03209	0.07800

SKY130_OSU_SC_12T_MS__MUX2

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.28221	0.28221	0.00593	0.28371

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_ms__mux2_1	0.00000	422.22900	422.75100

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)	-	0.00785	0.09387	0.79280
	A1->Y (RR)	-	0.00882	0.09455	0.79233
	S0->Y (RR)	(!A0 * A1)	0.03188	0.16998	1.01101
	S0->Y (FR)	(A0 * !A1)	0.01897	0.20590	2.09044

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)	-	0.00865	0.10565	0.86816
	A1->Y (FF)	-	0.00806	0.10487	0.86620
	S0->Y (FF)	(!A0 * A1)	0.03462	0.20828	1.62491
	S0->Y (RF)	(A0 * !A1)	0.01904	0.17933	1.54372

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	-	-0.00444	-0.00445	-0.00445
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00726	0.00726	0.00726
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00575	0.02304	0.31871
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00053	0.01626	0.30811

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	-	0.00457	0.00458	0.00458
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.01244	0.01245	0.01245
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00542	0.02165	0.31400
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01248	0.02906	0.32407

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)	0.00265	0.00265	0.00265

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00465	0.00465	0.00465

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)	-0.00116	-0.00116	-0.00117

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)	0.00120	0.00120	0.00120

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)	0.00249	0.01858	0.31041
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00254	0.01869	0.31066

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)	0.00962	0.02648	0.32155
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00868	0.02600	0.32127

SKY130_OSU_SC_12T_MS__NAND2x

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00287	0.00287	1.38441
sky130_osu_sc_12T_ms__nand2_l	0.00223	0.00226	1.00647

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nand2_1	0.00000	210.98800	839.08600
sky130_osu_sc_12T_ms__nand2_l	0.00000	656.15100	2620.86000

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)	0.01758	0.48795	7.92346
	B->Y (FR)	0.01993	0.46519	7.50435
sky130_osu_sc_12T_ms__nand2_l	A->Y (FR)	0.01974	0.53242	7.96528
	B->Y (FR)	0.02376	0.53617	7.97392

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)	0.02390	0.56987	9.26262
	B->Y (RF)	0.02722	0.54580	8.79410
sky130_osu_sc_12T_ms__nand2_l	A->Y (RF)	0.02627	0.61423	9.13839
	B->Y (RF)	0.02954	0.58236	8.52919

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	0.00491	0.01099	0.10075
	B	0.00000	0.00000	0.00000
	B	0.00638	0.01281	0.11061
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00368	0.00890	0.09367
	B	0.00000	0.00000	0.00000
	B	0.00475	0.01014	0.09981

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	0.02270	0.02656	0.08152
	B	0.00000	0.00000	0.00000
	B	0.02219	0.02559	0.08291
sky130_osu_sc_12T_ms__nand2_1	A	0.00000	0.00000	0.00000
	A	0.07246	0.07341	0.09355
	B	0.00000	0.00000	0.00000
	B	0.07070	0.07151	0.09366

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)	-0.00317	-0.00320	-0.00321
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00226	-0.00228	-0.00229

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)	0.00322	0.00325	0.00323
sky130_osu_sc_12T_ms__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00230	0.00232	0.00231

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)	-0.00293	-0.00295	-0.00294
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00211	-0.00213	-0.00212

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)	0.00316	0.00305	0.00299
sky130_osu_sc_12T_ms__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00228	0.00219	0.00216

SKY130_OSU_SC_12T_MS__NOR2x

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__nor2_1	6.34920
sky130_osu_sc_12T_ms__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__nor2_1	0.00284	0.00310	0.94748
sky130_osu_sc_12T_ms__nor2_l	0.00216	0.00236	0.68904

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__nor2_1	0.00000	187.44600	417.55600
sky130_osu_sc_12T_ms__nor2_l	0.00000	495.65100	1291.08000

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)	0.03453	0.56247	8.05408
	B->Y (FR)	0.02605	0.59347	8.68901
sky130_osu_sc_12T_ms__nor2_l	A->Y (FR)	0.03701	0.61621	8.05548
	B->Y (FR)	0.02997	0.64492	8.63510

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)	0.02388	0.39303	5.60813
	B->Y (RF)	0.01846	0.38455	5.56692
sky130_osu_sc_12T_ms__nor2_l	A->Y (RF)	0.02424	0.41246	5.41743
	B->Y (RF)	0.01982	0.40548	5.37339

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	0.00684	0.01227	0.11459
	B	0.00000	0.00000	0.00000
	B	0.00513	0.01159	0.11860
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00496	0.00970	0.10185
	B	0.00000	0.00000	0.00000
	B	0.00388	0.00975	0.11245

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	0.00591	0.01048	0.09409
	B	0.00000	0.00000	0.00000
	B	0.00713	0.01168	0.08798
sky130_osu_sc_12T_ms__nor2_1	A	0.00000	0.00000	0.00000
	A	0.01212	0.01544	0.08196
	B	0.00000	0.00000	0.00000
	B	0.02333	0.02626	0.08201

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)	-0.00154	-0.00199	0.00046
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00078	-0.00067	0.00697

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)	0.00645	0.00642	0.00594
sky130_osu_sc_12T_ms__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.01318	0.01298	0.01090

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)	-0.00087	-0.00087	-0.00033
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00044	-0.00041	0.00094

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)	0.00391	0.00385	0.00271
sky130_osu_sc_12T_ms__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00664	0.00644	0.00334

SKY130_OSU_SC_12T_MS__OAI21

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00287	0.00299	0.00252	0.91562

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai21_l	0.00000	588.10100	1729.42000

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)	0.03749	0.59457	8.45668
	A1->Y (FR)	0.04788	0.56615	7.83434
	B0->Y (FR)	0.02410	0.52224	7.59480

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)	0.03347	0.46863	6.53960
	A1->Y (RF)	0.04075	0.46736	6.43259
	B0->Y (RF)	0.02552	0.50720	7.31343

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	0.00729	0.01271	0.10628
	A1	0.00000	0.00000	0.00000
	A1	0.00906	0.01378	0.10783
	B0	0.00423	0.01121	0.12733

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	0.03778	0.04008	0.09017
	A1	0.00000	0.00000	0.00000
	A1	0.03491	0.03721	0.09387
	B0	0.02810	0.03127	0.08859

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)	0.01062	0.01062	0.01115
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00282	-0.00284	-0.00282
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00283	-0.00284	-0.00282

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)	0.01536	0.01529	0.01418
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00287	0.00289	0.00287
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00307	0.00294	0.00288

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)	0.01004	0.00959	0.01200
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00278	-0.00281	-0.00279
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00278	-0.00280	-0.00278

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)	0.01778	0.01774	0.01728
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00282	0.00286	0.00284
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00304	0.00291	0.00284

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)	-0.00235	-0.00238	-0.00243

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)	0.00245	0.00250	0.00246

SKY130_OSU_SC_12T_MS__OAI22

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__oai22_1	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_ms__oai22_1	0.00273	0.00283	0.00301	0.00298	0.99659

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__oai22_1	0.00000	280.96200	834.68300

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)	0.04992	0.56279	7.95658
	A1->Y (FR)	0.04205	0.59843	8.65194
	B0->Y (FR)	0.02682	0.58370	8.62816
	B1->Y (FR)	0.03539	0.54822	7.92647

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)	0.05586	0.51378	7.06358
	A1->Y (RF)	0.04554	0.50059	6.99190
	B0->Y (RF)	0.03844	0.53953	7.78647
	B1->Y (RF)	0.04913	0.55410	7.87897

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	0.01094	0.01558	0.10789
	A1	0.00920	0.01498	0.11393
	B0	0.00543	0.01134	0.10748
	B1	0.00729	0.01195	0.10047

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_ms__oai22_l	A0	0.01702	0.01989	0.08361
	A1	0.01811	0.02104	0.07952
	B0	0.00961	0.01359	0.08045
	B1	0.00820	0.01207	0.08227

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)	-0.00109	-0.00150	0.00095
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00090	0.00050	0.00294
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00268	-0.00269	-0.00268
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00269	-0.00269	-0.00268

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)	0.00682	0.00679	0.00631
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00882	0.00878	0.00831
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00276	0.00278	0.00277
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00302	0.00285	0.00278

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)	-0.00042	-0.00042	0.00012
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00158	0.00158	0.00212
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00267	-0.00269	-0.00268
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00267	-0.00267	-0.00267

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)	0.00431	0.00424	0.00311
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00630	0.00624	0.00511
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00275	0.00279	0.00277
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00302	0.00286	0.00278

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)	-0.00042	-0.00043	0.00011
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00157	0.00156	0.00211
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00319	-0.00321	-0.00319
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00307	-0.00307	-0.00317

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)	0.00432	0.00425	0.00312
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00633	0.00625	0.00512
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00331	0.00334	0.00326
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00319	0.00323	0.00321

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)	-0.00107	-0.00148	0.00096
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00092	0.00051	0.00296
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00324	-0.00327	-0.00324
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00312	-0.00315	-0.00323

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)	0.00681	0.00678	0.00630
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00880	0.00877	0.00829
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00336	0.00339	0.00332
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00325	0.00329	0.00327

SKY130_OSU_SC_12T_MS__OR2x

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00322	0.00298	1.72657
sky130_osu_sc_12T_ms__or2_2	0.00322	0.00298	3.53346
sky130_osu_sc_12T_ms__or2_4	0.00323	0.00298	6.92121
sky130_osu_sc_12T_ms__or2_8	0.00323	0.00298	13.56078
sky130_osu_sc_12T_ms__or2_l	0.00244	0.00227	1.18844

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__or2_1	0.00000	294.46300	425.45600
sky130_osu_sc_12T_ms__or2_2	0.00000	401.47400	846.12700
sky130_osu_sc_12T_ms__or2_4	0.00000	615.44200	1687.17000
sky130_osu_sc_12T_ms__or2_8	0.00000	1043.30000	3369.01000
sky130_osu_sc_12T_ms__or2_l	0.00000	827.48900	1329.73000

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)	0.04908	0.42609	6.08969
	B->Y (RR)	0.04124	0.40158	5.87816
sky130_osu_sc_12T_ms__or2_2	A->Y (RR)	0.05316	0.36211	6.03952
	B->Y (RR)	0.04520	0.33786	5.81270
sky130_osu_sc_12T_ms__or2_4	A->Y (RR)	0.06958	0.34756	6.10048
	B->Y (RR)	0.06138	0.32631	5.87516
sky130_osu_sc_12T_ms__or2_8	A->Y (RR)	0.10411	0.37918	6.30699
	B->Y (RR)	0.09567	0.36149	6.08513
sky130_osu_sc_12T_ms__or2_l	A->Y (RR)	0.05119	0.47019	5.99364
	B->Y (RR)	0.04432	0.44941	5.82721

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)	0.06743	0.47303	6.82746
	B->Y (FF)	0.05586	0.48822	7.25992
sky130_osu_sc_12T_ms__or2_2	A->Y (FF)	0.07900	0.43416	7.10516
	B->Y (FF)	0.06752	0.45134	7.54238
sky130_osu_sc_12T_ms__or2_4	A->Y (FF)	0.11241	0.43691	7.27185
	B->Y (FF)	0.10098	0.45829	7.70376
sky130_osu_sc_12T_ms__or2_8	A->Y (FF)	0.18226	0.49374	7.43056
	B->Y (FF)	0.17086	0.52131	7.85679
sky130_osu_sc_12T_ms__or2_l	A->Y (FF)	0.07219	0.50690	6.57749
	B->Y (FF)	0.06145	0.52046	6.95750

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	0.01245	0.02100	0.17972
	B	0.00000	0.00000	0.00000
	B	0.01471	0.02433	0.18826
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.01667	0.02582	0.19029
	B	0.00000	0.00000	0.00000
	B	0.01870	0.02880	0.19651
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.02763	0.03718	0.20949
	B	0.00000	0.00000	0.00000
	B	0.02916	0.03961	0.21180
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.06022	0.06588	0.25119
	B	0.00000	0.00000	0.00000
	B	0.06083	0.06714	0.25423
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.02045	0.02844	0.18255
	B	0.00000	0.00000	0.00000
	B	0.03661	0.04533	0.20452

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	0.02127	0.03079	0.22696
	B	0.00000	0.00000	0.00000
	B	0.01933	0.03124	0.25360
sky130_osu_sc_12T_ms__or2_2	A	0.00000	0.00000	0.00000
	A	0.03689	0.04422	0.23818
	B	0.00000	0.00000	0.00000
	B	0.03496	0.04456	0.26481
sky130_osu_sc_12T_ms__or2_4	A	0.00000	0.00000	0.00000
	A	0.07483	0.07311	0.25740
	B	0.00000	0.00000	0.00000
	B	0.07313	0.07361	0.28456
sky130_osu_sc_12T_ms__or2_8	A	0.00000	0.00000	0.00000
	A	0.17303	0.13918	0.29834
	B	0.00000	0.00000	0.00000
	B	0.17179	0.14156	0.32622
sky130_osu_sc_12T_ms__or2_l	A	0.00000	0.00000	0.00000
	A	0.03723	0.04523	0.21036
	B	0.00000	0.00000	0.00000
	B	0.03614	0.04620	0.23364

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)	-0.00151	-0.00198	0.00046
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00149	-0.00196	0.00048
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00145	-0.00192	0.00053
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00137	-0.00183	0.00061
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00072	-0.00066	0.00697

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)	0.00651	0.00648	0.00599
sky130_osu_sc_12T_ms__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00653	0.00650	0.00601
sky130_osu_sc_12T_ms__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00657	0.00654	0.00606
sky130_osu_sc_12T_ms__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00665	0.00663	0.00614
sky130_osu_sc_12T_ms__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.01317	0.01298	0.01089

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)	-0.00085	-0.00085	-0.00035
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00083	-0.00083	-0.00033
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00078	-0.00079	-0.00028
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00070	-0.00070	-0.00019
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00042	-0.00039	0.00094

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)	0.00396	0.00390	0.00277
sky130_osu_sc_12T_ms__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00398	0.00392	0.00279
sky130_osu_sc_12T_ms__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00403	0.00396	0.00283
sky130_osu_sc_12T_ms__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00411	0.00405	0.00292
sky130_osu_sc_12T_ms__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00668	0.00647	0.00337

SKY130_OSU_SC_12T_MS__TBUFIx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__tbufi_1	8.30280
sky130_osu_sc_12T_ms__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_ms__tbufi_1	0.00308	0.00407	0.98840
sky130_osu_sc_12T_ms__tbufi_l	0.00237	0.00314	0.66493

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tbufi_1	0.00000	212.43100	837.08000
sky130_osu_sc_12T_ms__tbufi_l	0.00000	656.77100	2603.45000

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)	0.02429	0.57654	8.53658
	OE->Y (FR)	0.03048	0.33150	5.34254
	OE->Y (RR)	0.04802	0.47764	6.04601
sky130_osu_sc_12T_ms__tbufi_l	A->Y (FR)	0.02911	0.62582	8.28440
	OE->Y (FR)	0.03155	0.33149	5.34253
	OE->Y (RR)	0.05168	0.53000	5.84788

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)	0.02370	0.49661	7.31734
	OE->Y (FF)	0.03084	0.33149	5.34254
	OE->Y (RF)	0.02199	0.44909	6.49066
sky130_osu_sc_12T_ms__tbufi_l	A->Y (RF)	0.02639	0.51624	6.83921
	OE->Y (FF)	0.03176	0.33149	5.34252
	OE->Y (RF)	0.02431	0.46083	5.82242

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	0.01623	0.02159	0.10910
	OE	0.00000	0.00000	0.00000
	OE	0.01519	0.02996	0.29234
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.03931	0.04376	0.12553
	OE	0.00000	0.00000	0.00000
	OE	0.03567	0.04841	0.27708

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	0.01829	0.02203	0.08386
	OE	0.00000	0.00000	0.00000
	OE	0.02098	0.03724	0.33026
sky130_osu_sc_12T_ms__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.05634	0.05841	0.10004
	OE	0.00000	0.00000	0.00000
	OE	0.05589	0.06890	0.30434

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)	-0.00242	-0.00245	-0.00235
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00166	-0.00167	-0.00149
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00189	-0.00191	-0.00184
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00111	-0.00109	-0.00035

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)	0.00261	0.00261	0.00243
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00290	0.00291	0.00267
sky130_osu_sc_12T_ms__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00209	0.00209	0.00187
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00316	0.00330	0.00301

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)	0.00912	0.02599	0.32707
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00534	0.02235	0.32498
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.02394	0.03777	0.28339
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01267	0.02691	0.27733

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)	0.00619	0.02402	0.33122
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00559	0.02339	0.32918
sky130_osu_sc_12T_ms__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00488	0.02058	0.28622
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00425	0.01968	0.28042

SKY130_OSU_SC_12T_MS__TNBUFIx

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00307	0.00455	0.99566
sky130_osu_sc_12T_ms__tnbufi_l	0.00227	0.00344	0.66646

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__tnbufi_1	0.00000	351.83700	422.29600
sky130_osu_sc_12T_ms__tnbufi_l	0.00000	1098.97000	1325.60000

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)	0.02437	0.57805	8.57381
	OE->Y (RR)	0.02333	0.33186	5.34290
	OE->Y (FR)	0.03096	0.52250	7.46127
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (FR)	0.02852	0.62542	8.28998
	OE->Y (RR)	0.02483	0.33157	5.34259
	OE->Y (FR)	0.03416	0.56825	7.06847

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)	0.02327	0.49785	7.35519
	OE->Y (RF)	0.02303	0.33188	5.34291
	OE->Y (FF)	0.03699	0.41691	5.41687
sky130_osu_sc_12T_ms__tnbufi_l	A->Y (RF)	0.02526	0.51571	6.85084
	OE->Y (RF)	0.02459	0.33157	5.34265
	OE->Y (FF)	0.04063	0.44894	5.10967

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	0.00500	0.01045	0.09895
	OE	0.00000	0.00000	0.00000
	OE	0.01213	0.02995	0.32838
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00378	0.00855	0.09392
	OE	0.00000	0.00000	0.00000
	OE	0.00919	0.02469	0.28095

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	0.00869	0.01245	0.07417
	OE	0.00000	0.00000	0.00000
	OE	0.01855	0.03549	0.31296
sky130_osu_sc_12T_ms__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.02751	0.02961	0.07170
	OE	0.00000	0.00000	0.00000
	OE	0.03196	0.04625	0.28256

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)	0.00161	0.00160	0.00171
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00239	0.00238	0.00255
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00998	0.00997	0.01004
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.01075	0.01077	0.01148

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)	0.00585	0.00585	0.00567
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00615	0.00615	0.00590
sky130_osu_sc_12T_ms__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.01323	0.01323	0.01302
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.01426	0.01439	0.01410

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)	0.00112	0.01827	0.32285
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00027	0.01792	0.32044
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00993	0.02439	0.28026
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00911	0.02343	0.27398

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)	0.01276	0.03114	0.33636
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00900	0.02769	0.33382
sky130_osu_sc_12T_ms__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01829	0.03374	0.29031
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00698	0.02292	0.28387

SKY130_OSU_SC_12T_MS__XNOR2

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_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	0.00616	0.00531	1.02774

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xnor2_l	0.00000	772.80200	1257.41000

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	0.06017	0.50056	6.24468
	A->Y (FR)	!B	0.03200	0.58018	8.57998
	B->Y (RR)	A	0.04968	0.50055	6.49064
	B->Y (FR)	!A	0.04162	0.55214	7.95833

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	0.06269	0.46516	5.81051
	A->Y (RF)	!B	0.03173	0.48502	7.07070
	B->Y (FF)	A	0.05368	0.45989	5.84099
	B->Y (RF)	!A	0.03891	0.49211	7.05029

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	0.02656	0.04161	0.32244
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01210	0.03477	0.42649
	B	A	0.00000	0.00000	0.00000
	B	A	0.02336	0.04065	0.35354
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01312	0.03457	0.41453

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	0.03429	0.05087	0.35291
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.03125	0.05053	0.40650
	B	A	0.00000	0.00000	0.00000
	B	A	0.03885	0.05629	0.36329
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02597	0.04534	0.39998

SKY130_OSU_SC_12T_MS__XOR2

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_ms__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_ms__xor2_l	0.00620	0.00535	0.97750

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_ms__xor2_l	0.00000	771.96800	1393.82000

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	0.06213	0.51569	6.46427
	A->Y (FR)	B	0.04338	0.58126	8.29468
	B->Y (RR)	!A	0.05250	0.51412	6.50259
	B->Y (FR)	A	0.04763	0.58276	8.25152

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	0.05843	0.45720	5.47382
	A->Y (RF)	B	0.03471	0.50263	7.19074
	B->Y (FF)	!A	0.05545	0.46103	5.72482
	B->Y (RF)	A	0.03880	0.47938	6.72650

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	0.02592	0.04614	0.40684
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01400	0.02904	0.32416
	B	A	0.00000	0.00000	0.00000
	B	A	0.02626	0.04629	0.40132
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01303	0.02940	0.33098

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	0.03395	0.05249	0.39055
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.03146	0.04693	0.31479
	B	A	0.00000	0.00000	0.00000
	B	A	0.03288	0.05056	0.38132
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.02990	0.04669	0.34127

SKY130_OSU_SC_12T_MS_x

sky130_osu_sc_12T_ms_ff_1P95_150C.ccs
Cell Library: Process , Voltage 1.95, Temp 150.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_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	0.86668
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	327021.00000	654042.00000
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
	-0.00071	0.10565	1.66271

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
	5.69194	5.46298	1.91022