sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_12T_HS__ADDFx
SKY130_OSU_SC_12T_HS__ADDHx
SKY130_OSU_SC_12T_HS__AND2x
SKY130_OSU_SC_12T_HS__AOI21
SKY130_OSU_SC_12T_HS__AOI22
SKY130_OSU_SC_12T_HS__BUFx
SKY130_OSU_SC_12T_HS__DFFRx
SKY130_OSU_SC_12T_HS__DFFSRx
SKY130_OSU_SC_12T_HS__DFFSx
SKY130_OSU_SC_12T_HS__DFFx
SKY130_OSU_SC_12T_HS__INVx
SKY130_OSU_SC_12T_HS__MUX2
SKY130_OSU_SC_12T_HS__NAND2x
SKY130_OSU_SC_12T_HS__NOR2x
SKY130_OSU_SC_12T_HS__OAI21
SKY130_OSU_SC_12T_HS__OAI22
SKY130_OSU_SC_12T_HS__OR2x
SKY130_OSU_SC_12T_HS__TBUFIx
SKY130_OSU_SC_12T_HS__TNBUFIx
SKY130_OSU_SC_12T_HS__XNOR2
SKY130_OSU_SC_12T_HS__XOR2
SKY130_OSU_SC_12T_HS_x

SKY130_OSU_SC_12T_HS__ADDFx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addf_1	31.25760
sky130_osu_sc_12T_hs__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_hs__addf_1	0.01031	0.01030	0.00810	0.37817	0.15569	0.35308
sky130_osu_sc_12T_hs__addf_l	0.01031	0.01030	0.00810	0.28986	0.15580	0.35308

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.00039	0.00042
sky130_osu_sc_12T_hs__addf_l	0.00000	0.00038	0.00042

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (RR)	0.27413	2.03649	19.11460
	B->CO (RR)	0.26219	1.99993	19.08300
	CI->CO (RR)	0.26266	2.05501	19.64240
	CON->CO (FR)	0.07441	1.18265	13.30070
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.26352	1.92393	16.75970
	B->CO (RR)	0.25266	1.89970	16.89940
	CI->CO (RR)	0.25216	1.94308	17.30790
	CON->CO (FR)	0.07974	1.20922	12.67960

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (FF)	0.74117	4.03872	35.36610
	B->CO (FF)	0.67891	3.89078	34.51450
	CI->CO (FF)	0.67288	3.93173	35.03380
	CON->CO (RF)	0.02689	0.53980	6.61159
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.70882	3.63846	29.24830
	B->CO (FF)	0.64779	3.50413	28.58060
	CI->CO (FF)	0.64044	3.53160	28.92540
	CON->CO (RF)	0.02803	0.54851	6.42326

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (FR)	0.56204	1.96547	13.69170
	B->CON (FR)	0.50701	1.87405	13.42370
	CI->CON (FR)	0.49372	1.86046	13.39270
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.53675	1.93940	13.66920
	B->CON (FR)	0.48272	1.84935	13.40330
	CI->CON (FR)	0.46797	1.83487	13.37090

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (RF)	0.11608	0.59468	5.30759
	B->CON (RF)	0.10948	0.60860	5.61743
	CI->CON (RF)	0.10453	0.61548	5.75589
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.11190	0.59055	5.30320
	B->CON (RF)	0.10550	0.60475	5.61271
	CI->CON (RF)	0.10036	0.61141	5.75106

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-R)	0.99921	4.31253	32.92250
	B->S (-R)	0.95339	4.22613	32.46160
	CI->S (-R)	0.92648	4.19643	32.56950
	CON->S (RR)	0.17305	1.18812	9.29196
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.95963	4.28084	32.89410
	B->S (-R)	0.91472	4.19569	32.43470
	CI->S (-R)	0.88687	4.16428	32.54130
	CON->S (RR)	0.17317	1.18827	9.29251

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-F)	0.57153	1.79187	12.40430
	B->S (-F)	0.58344	1.75967	12.54240
	CI->S (-F)	0.55962	1.80961	12.95320
	CON->S (FF)	0.28678	0.92819	7.12190
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.56118	1.78719	12.39800
	B->S (-F)	0.57371	1.75146	12.53810
	CI->S (-F)	0.54926	1.80005	12.94580
	CON->S (FF)	0.28680	0.92818	7.12190

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00168	0.00165	0.00158
	B	0.00191	0.00194	0.00190
	CI	0.00202	0.00207	0.00203
sky130_osu_sc_12T_hs__addf_l	A	0.00151	0.00147	0.00140
	B	0.00174	0.00176	0.00168
	CI	0.00186	0.00189	0.00183

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00552	0.00550	0.00546
	B	0.00546	0.00546	0.00540
	CI	0.00475	0.00484	0.00479
sky130_osu_sc_12T_hs__addf_l	A	0.00538	0.00535	0.00530
	B	0.00531	0.00531	0.00524
	CI	0.00461	0.00469	0.00464

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00551	0.00548	0.00545
	B	0.00545	0.00543	0.00536
	CI	0.00475	0.00481	0.00477
sky130_osu_sc_12T_hs__addf_l	A	0.00538	0.00534	0.00531
	B	0.00532	0.00529	0.00522
	CI	0.00461	0.00468	0.00463

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00166	0.00163	0.00154
	B	0.00189	0.00191	0.00176
	CI	0.00202	0.00206	0.00200
sky130_osu_sc_12T_hs__addf_l	A	0.00149	0.00146	0.00136
	B	0.00172	0.00174	0.00159
	CI	0.00185	0.00189	0.00182

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00552	0.00550	0.00547
	B	0.00546	0.00546	0.00539
	CI	0.00475	0.00484	0.00479
sky130_osu_sc_12T_hs__addf_l	A	0.00539	0.00536	0.00533
	B	0.00532	0.00532	0.00526
	CI	0.00461	0.00470	0.00465

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01109	0.01110	0.01103
	B	0.01037	0.01018	0.01000
	CI	0.00906	0.00902	0.00896
sky130_osu_sc_12T_hs__addf_l	A	0.01109	0.01111	0.01104
	B	0.01036	0.01018	0.01000
	CI	0.00906	0.00903	0.00896

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

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_hs__addh_1	18.55920
sky130_osu_sc_12T_hs__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_hs__addh_1	0.00510	0.00538	0.37007	0.37720	0.37834
sky130_osu_sc_12T_hs__addh_l	0.00494	0.00530	0.29005	0.37510	0.29149

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.00035	0.00041
sky130_osu_sc_12T_hs__addh_l	0.00000	0.00033	0.00038

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (RR)	0.26065	1.30982	10.27550
	B->CO (RR)	0.26448	1.30335	10.42640
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.19617	1.21360	8.76660
	B->CO (RR)	0.19899	1.20350	8.86273

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CO (FF)	0.27050	0.97346	8.00280
	B->CO (FF)	0.28179	0.98790	8.07791
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.22477	0.86974	7.08837
	B->CO (FF)	0.23554	0.88258	7.17726

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (RR)	0.37926	1.40350	10.32780
	B->CON (RR)	0.38304	1.39511	10.49920
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.29335	1.25006	9.05934
	B->CON (RR)	0.29618	1.23552	9.14501

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->CON (FF)	0.32488	1.00908	8.07513
	B->CON (FF)	0.32952	1.01850	8.14159
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.26035	0.87362	7.14742
	B->CON (FF)	0.26636	0.88297	7.23596

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (FR)	0.46868	2.14686	18.20750
	B->S (FR)	0.47434	2.15686	18.28670
	CON->S (FR)	0.07844	1.19226	13.37980
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.38340	1.88821	15.22210
	B->S (FR)	0.38992	1.89742	15.30650
	CON->S (FR)	0.07982	1.21047	12.72250

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addh_1	A->S (RF)	0.51908	2.42920	19.34210
	B->S (RF)	0.52288	2.42133	19.48560
	CON->S (RF)	0.03413	0.65326	8.12181
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.39361	1.89184	13.39780
	B->S (RF)	0.39660	1.87776	13.48200
	CON->S (RF)	0.02737	0.55021	6.46071

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00288	0.00280	0.00269
	B	0.00000	0.00000	0.00000
	B	0.00273	0.00265	0.00255
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00243	0.00231	0.00222
	B	0.00000	0.00000	0.00000
	B	0.00227	0.00216	0.00209

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00399	0.00391	0.00374
	B	0.00000	0.00000	0.00000
	B	0.00417	0.00419	0.00404
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00358	0.00346	0.00331
	B	0.00000	0.00000	0.00000
	B	0.00374	0.00372	0.00359

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00288	0.00280	0.00269
	B	0.00000	0.00000	0.00000
	B	0.00273	0.00265	0.00255
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00243	0.00231	0.00223
	B	0.00000	0.00000	0.00000
	B	0.00228	0.00216	0.00208

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00399	0.00391	0.00374
	B	0.00000	0.00000	0.00000
	B	0.00417	0.00419	0.00404
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00358	0.00346	0.00325
	B	0.00000	0.00000	0.00000
	B	0.00374	0.00372	0.00356

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00400	0.00392	0.00383
	B	0.00000	0.00000	0.00000
	B	0.00418	0.00419	0.00414
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00358	0.00347	0.00336
	B	0.00000	0.00000	0.00000
	B	0.00375	0.00373	0.00368

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00288	0.00279	0.00269
	B	0.00000	0.00000	0.00000
	B	0.00273	0.00264	0.00256
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00243	0.00231	0.00222
	B	0.00000	0.00000	0.00000
	B	0.00227	0.00216	0.00209

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.22426	0.21253	0.04435
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.22466	0.21291	0.04445

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.22415	0.21191	0.04101
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.22455	0.21230	0.04110

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__and2_1	8.30280
sky130_osu_sc_12T_hs__and2_2	10.25640
sky130_osu_sc_12T_hs__and2_4	14.16360
sky130_osu_sc_12T_hs__and2_6	18.07080
sky130_osu_sc_12T_hs__and2_8	21.97800
sky130_osu_sc_12T_hs__and2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__and2_1	0.00269	0.00279	0.37287
sky130_osu_sc_12T_hs__and2_2	0.00270	0.00279	0.74738
sky130_osu_sc_12T_hs__and2_4	0.00269	0.00279	1.46240
sky130_osu_sc_12T_hs__and2_6	0.00273	0.00279	2.17451
sky130_osu_sc_12T_hs__and2_8	0.00269	0.00279	2.88091
sky130_osu_sc_12T_hs__and2_l	0.00207	0.00213	0.28990

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.00015	0.00020
sky130_osu_sc_12T_hs__and2_2	0.00000	0.00022	0.00024
sky130_osu_sc_12T_hs__and2_4	0.00000	0.00036	0.00039
sky130_osu_sc_12T_hs__and2_6	0.00000	0.00050	0.00055
sky130_osu_sc_12T_hs__and2_8	0.00000	0.00064	0.00071
sky130_osu_sc_12T_hs__and2_l	0.00000	0.00012	0.00015

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.15895	1.11436	8.78772
	B->Y (RR)	0.16500	1.11170	8.92194
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.17015	0.98762	9.04809
	B->Y (RR)	0.17611	0.97894	9.14162
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.22995	0.96224	9.47156
	B->Y (RR)	0.23583	0.94550	9.50398
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.29167	0.99128	9.80289
	B->Y (RR)	0.29739	0.97134	9.80137
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.35075	1.03644	10.12430
	B->Y (RR)	0.35671	1.01755	10.08710
sky130_osu_sc_12T_hs__and2_l	A->Y (RR)	0.15126	1.13256	8.27207
	B->Y (RR)	0.15662	1.13143	8.43670

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (FF)	0.17762	0.78582	6.74522
	B->Y (FF)	0.18830	0.80068	6.84920
sky130_osu_sc_12T_hs__and2_2	A->Y (FF)	0.22192	0.80708	7.09513
	B->Y (FF)	0.23118	0.81842	7.17662
sky130_osu_sc_12T_hs__and2_4	A->Y (FF)	0.32905	0.91383	7.62825
	B->Y (FF)	0.33354	0.91936	7.68226
sky130_osu_sc_12T_hs__and2_6	A->Y (FF)	0.43943	1.03264	8.03171
	B->Y (FF)	0.43924	1.02979	8.06846
sky130_osu_sc_12T_hs__and2_8	A->Y (FF)	0.54423	1.14536	8.34722
	B->Y (FF)	0.54003	1.14172	8.37418
sky130_osu_sc_12T_hs__and2_1	A->Y (FF)	0.16312	0.76303	6.08928
	B->Y (FF)	0.17927	0.78158	6.19777

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00198	0.00179	0.00168
	B	0.00000	0.00000	0.00000
	B	0.00202	0.00182	0.00174
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00363	0.00356	0.00351
	B	0.00000	0.00000	0.00000
	B	0.00368	0.00365	0.00357
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00742	0.00765	0.00768
	B	0.00000	0.00000	0.00000
	B	0.00746	0.00772	0.00776
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01121	0.01166	0.01178
	B	0.00000	0.00000	0.00000
	B	0.01127	0.01177	0.01188
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01493	0.01545	0.01581
	B	0.00000	0.00000	0.00000
	B	0.01501	0.01571	0.01600
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00155	0.00142	0.00134
	B	0.00000	0.00000	0.00000
	B	0.00158	0.00143	0.00137

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00488	0.00472	0.00467
	B	0.00000	0.00000	0.00000
	B	0.00545	0.00530	0.00523
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00609	0.00617	0.00613
	B	0.00000	0.00000	0.00000
	B	0.00668	0.00674	0.00668
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00913	0.00970	0.00969
	B	0.00000	0.00000	0.00000
	B	0.00971	0.01024	0.01020
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01228	0.01327	0.01338
	B	0.00000	0.00000	0.00000
	B	0.01287	0.01378	0.01385
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01522	0.01658	0.01689
	B	0.00000	0.00000	0.00000
	B	0.01582	0.01710	0.01735
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00372	0.00359	0.00355
	B	0.00000	0.00000	0.00000
	B	0.00416	0.00402	0.00398

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00162	-0.00163	-0.00164
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00161	-0.00163	-0.00164
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00162	-0.00162	-0.00164
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00164	-0.00166	-0.00165
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00162	-0.00164	-0.00164
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00113	-0.00114	-0.00114

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00166	0.00164
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00167	0.00164
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00165	0.00164
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00165	0.00167	0.00166
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00163	0.00165	0.00164
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00114	0.00117	0.00115

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00154	-0.00155	-0.00154
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00108	-0.00109	-0.00108

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00154	0.00155	0.00155
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00154	0.00157	0.00155
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00154	0.00157	0.00155
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00154	0.00156	0.00155
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00154	0.00156	0.00155
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00108	0.00109	0.00109

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__aoi21_l	0.00240	0.00260	0.00262	0.15600

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (FR)	0.27672	1.71645	13.62260
	A1->Y (FR)	0.22902	1.60205	13.16520
	B0->Y (FR)	0.22870	1.62166	13.36140

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (RF)	0.05451	0.52913	5.21040
	A1->Y (RF)	0.05012	0.54968	5.53449
	B0->Y (RF)	0.03260	0.48180	5.04128

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00367	0.00361	0.00360
	A1	0.00000	0.00000	0.00000
	A1	0.00313	0.00305	0.00302
	B0	0.00318	0.00308	0.00303

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00055	0.00045	0.00038
	A1	0.00000	0.00000	0.00000
	A1	0.00056	0.00045	0.00037
	B0	-0.00029	-0.00029	-0.00037

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00126	-0.00131	-0.00130
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00133	-0.00134	-0.00133
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00133	-0.00134	-0.00133

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00129	0.00131	0.00130
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00133	0.00134	0.00134
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00133	0.00135	0.00134

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00126	-0.00131	-0.00130
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00133	-0.00134	-0.00134
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00147	-0.00148	-0.00149

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00130	0.00131	0.00130
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00133	0.00134	0.00134
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00148	0.00148	0.00149

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00080	-0.00081	-0.00080

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00087	0.00088	0.00082

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__aoi22_l	0.00240	0.00259	0.00276	0.00256	0.15672

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00012	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (FR)	0.35205	1.80464	13.76900
	A1->Y (FR)	0.31387	1.75724	13.68770
	B0->Y (FR)	0.24167	1.63870	13.40370
	B1->Y (FR)	0.28005	1.68559	13.48030

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (RF)	0.06754	0.54504	5.24329
	A1->Y (RF)	0.06310	0.56560	5.57083
	B0->Y (RF)	0.04499	0.54080	5.52610
	B1->Y (RF)	0.04952	0.51981	5.20304

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00451	0.00445	0.00443
	A1	0.00398	0.00389	0.00385
	B0	0.00340	0.00327	0.00320
	B1	0.00393	0.00384	0.00377

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00120	0.00112	0.00102
	A1	0.00121	0.00112	0.00102
	B0	-0.00016	-0.00016	-0.00023
	B1	-0.00016	-0.00015	-0.00022

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00126	-0.00131	-0.00129
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00133	-0.00134	-0.00133
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00133	-0.00134	-0.00133
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00133	-0.00134	-0.00133

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00129	0.00132	0.00129
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00133	0.00135	0.00134
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00133	0.00134	0.00134
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00133	0.00134	0.00134

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00126	-0.00131	-0.00130
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00133	-0.00134	-0.00134
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00146	-0.00148	-0.00148
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00146	-0.00148	-0.00148

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00129	0.00131	0.00130
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00133	0.00134	0.00134
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00148	0.00150	0.00148
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00148	0.00152	0.00148

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00080	-0.00081	-0.00080
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00079	-0.00080	-0.00079
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00153	-0.00155	-0.00156
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00153	-0.00155	-0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00089	0.00090	0.00082
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00079	0.00080	0.00079
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00155	0.00156	0.00156
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00155	0.00156	0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00080	-0.00082	-0.00081
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00080	-0.00081	-0.00080
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00141	-0.00142	-0.00141
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00141	-0.00142	-0.00141

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00090	0.00091	0.00083
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00080	0.00081	0.00080
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00141	0.00142	0.00142
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00141	0.00142	0.00142

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__buf_1	6.34920
sky130_osu_sc_12T_hs__buf_2	8.30280
sky130_osu_sc_12T_hs__buf_4	12.21000
sky130_osu_sc_12T_hs__buf_6	16.11720
sky130_osu_sc_12T_hs__buf_8	20.02440
sky130_osu_sc_12T_hs__buf_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__buf_1	0.00281	0.35516
sky130_osu_sc_12T_hs__buf_2	0.00281	0.73512
sky130_osu_sc_12T_hs__buf_4	0.00280	1.44949
sky130_osu_sc_12T_hs__buf_6	0.00083	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00280	2.87298
sky130_osu_sc_12T_hs__buf_l	0.00211	0.29149

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.00012	0.00012
sky130_osu_sc_12T_hs__buf_2	0.00000	0.00018	0.00020
sky130_osu_sc_12T_hs__buf_4	0.00000	0.00030	0.00036
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.00055	0.00068
sky130_osu_sc_12T_hs__buf_l	0.00000	0.00010	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (RR)**	0.12373	1.07703	8.65925
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.11897	0.92794	8.93494
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.15373	0.87077	9.27008
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.22721	0.89148	9.81638
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.11954	1.08984	8.22530

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__buf_1	**A->Y (FF)**	0.16977	0.77025	6.60550
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.21355	0.79792	7.02472
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.32095	0.90274	7.57876
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.53607	1.13362	8.32588
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.15922	0.75528	6.05935

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00191	0.00165	0.00153
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00355	0.00342	0.00333
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00736	0.00747	0.00755
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01490	0.01541	0.01566
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00151	0.00133	0.00124

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00482	0.00461	0.00457
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00599	0.00601	0.00594
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00906	0.00950	0.00947
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01519	0.01638	0.01662
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00373	0.00356	0.00353

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00041	-0.00041	-0.00041

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
	0.00041	0.00041	0.00041

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffr_1	42.49080
sky130_osu_sc_12T_hs__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_hs__dffr_1	0.00253	0.00256	0.00837	0.37049	0.36835
sky130_osu_sc_12T_hs__dffr_l	0.00253	0.00256	0.00836	0.29024	0.29066

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.00061	0.00072
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.00059	0.00070

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RR)	0.86110	2.26738	13.36790
	QN->Q (FR)	0.08139	1.24420	13.91320
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.81425	2.25491	12.71880
	QN->Q (FR)	0.08336	1.25208	13.12920

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RF)	0.79537	2.43024	16.32990
	QN->Q (RF)	0.02917	0.57543	7.10985
	RN->Q (FF)	0.55654	2.35453	19.26260
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.78825	2.51851	15.95540
	QN->Q (RF)	0.02965	0.57878	6.86361
	RN->Q (FF)	0.54974	2.44142	18.87360

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->QN (RR)	0.71360	1.67136	9.47491
	RN->QN (FR)	0.47427	1.59358	12.40960
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.70193	1.70296	9.26246
	RN->QN (FR)	0.46301	1.62531	12.18010

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	**CK->QN (RF)**	0.72299	1.23450	4.26137
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.68004	1.19756	4.17575

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_hs__dffr_1	hold	CK (R)	-0.08723	-0.11275	-0.59160
	setup	CK (R)	0.63249	0.62790	1.45671
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.08695	-0.11272	-0.59046
	setup	CK (R)	0.63892	0.63334	1.48022

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.39482	-0.73090	-9.71410
	setup	CK (R)	0.44080	0.76400	9.80173
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.39522	-0.73391	-9.71243
	setup	CK (R)	0.44107	0.76400	9.80238

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.08723	-0.11275	-0.59160
	setup	CK (R)	0.63249	0.62790	1.45671
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.08695	-0.11272	-0.59046
	setup	CK (R)	0.63892	0.63334	1.48022

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	hold	CK (R)	-0.39482	-0.73090	-9.71410
	setup	CK (R)	0.44080	0.76400	9.80173
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.39522	-0.73391	-9.71243
	setup	CK (R)	0.44107	0.76400	9.80238

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.58586	0.59389	1.25352
	removal	CK (R)	-0.08853	-0.11107	-0.05205
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.59120	0.59627	1.26520
	removal	CK (R)	-0.08853	-0.11107	-0.05205

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.58586	0.59389	1.25352
	removal	CK (R)	-0.08853	-0.11107	-0.05205
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.59120	0.59627	1.26520
	removal	CK (R)	-0.08853	-0.11107	-0.05205

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	RN ()	0.36057	0.66952	13.33370
	min_pulse_width	RN ()	0.36194	0.66730	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.34947	0.66286	13.33370
	min_pulse_width	RN ()	0.35453	0.66286	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_hs__dffr_1	min_pulse_width	CK ()	0.33605	0.45654	13.33370
	min_pulse_width	CK ()	0.42212	0.45654	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.31195	0.45654	13.33370
	min_pulse_width	CK ()	0.41179	0.45654	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_hs__dffr_1	min_pulse_width	CK ()	0.87051	0.93130	13.33370
	min_pulse_width	CK ()	0.35627	0.64733	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.87465	0.93574	13.33370
	min_pulse_width	CK ()	0.35627	0.64733	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00477	0.00433	0.00161
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00429	0.00387	0.00201

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00536	0.00509	0.00404
	RN	-0.00067	-0.01992	-0.19206
	RN	0.01200	0.01185	0.01063
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00486	0.00461	0.00391
	RN	-0.00067	-0.01720	-0.15046
	RN	0.01151	0.01137	0.01052

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00536	0.00510	0.00406
	RN	-0.00067	-0.01985	-0.19095
	RN	0.01201	0.01186	0.01064
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00486	0.00461	0.00394
	RN	-0.00067	-0.01722	-0.15068
	RN	0.01151	0.01138	0.01052

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00476	0.00431	0.00145
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00428	0.00385	0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00127	-0.00132	-0.00131
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00556	0.00537	0.00520
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00217	0.00201	0.00187
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00127	-0.00132	-0.00131
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00557	0.00538	0.00519
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00217	0.00201	0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00131	0.00133	0.00131
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00849	0.00839	0.00823
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00407	0.00395	0.00391
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00131	0.00133	0.00131
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00849	0.00839	0.00823
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00407	0.00395	0.00391

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00193	0.00172	0.00158
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00557	0.00522	0.00498
sky130_osu_sc_12T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00193	0.00172	0.00158
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00558	0.00523	0.00498

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00475	0.00454	0.00451
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00933	0.00908	0.00882
sky130_osu_sc_12T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00476	0.00454	0.00451
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00934	0.00909	0.00883

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00031	-0.00062	-0.00081
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00275	0.00229	0.00186
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00031	-0.00061	-0.00084
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00031	-0.00062	-0.00081
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00275	0.00228	0.00186
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00031	-0.00063	-0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00773	0.00741	0.00727
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01463	0.01423	0.01374
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01107	0.01076	0.01047
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01463	0.01412	0.01378
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00794	0.00762	0.00754
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00773	0.00741	0.00727
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01463	0.01423	0.01376
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01107	0.01076	0.01048
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01464	0.01412	0.01378
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00794	0.00762	0.00754

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffsr_1	46.39800
sky130_osu_sc_12T_hs__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_hs__dffsr_1	0.00249	0.00257	0.00595	0.00850	0.37797	0.37699
sky130_osu_sc_12T_hs__dffsr_l	0.00249	0.00257	0.00594	0.00849	0.29123	0.29377

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.00066	0.00077
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.00063	0.00075

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RR)	0.92553	2.34193	13.63270
	QN->Q (FR)	0.07797	1.22317	13.71900
	RN->Q (RR)	0.76640	2.18772	13.60290
	SN->Q (FR)	0.76693	2.32827	17.21990
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.89226	2.34808	12.97120
	QN->Q (FR)	0.08319	1.25752	13.14820
	RN->Q (RR)	0.73274	2.19567	12.94830
	SN->Q (FR)	0.73059	2.33309	16.52760

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RF)	0.90728	2.54724	16.50600
	QN->Q (RF)	0.02898	0.57749	7.15880
	RN->Q (FF)	0.59432	2.38807	19.43700
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.90015	2.64310	16.12710
	QN->Q (RF)	0.02950	0.57874	6.86880
	RN->Q (FF)	0.59226	2.48748	19.04790

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RR)	0.82448	1.78721	9.61101
	RN->QN (FR)	0.51331	1.62807	12.54330
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.81237	1.82858	9.46235
	RN->QN (FR)	0.50555	1.67328	12.38270

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RF)	0.79453	1.32087	4.50278
	RN->QN (RF)	0.63440	1.17237	4.47737
	SN->QN (FF)	0.63395	1.31304	8.07429
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.76173	1.29353	4.40574
	RN->QN (RF)	0.60143	1.14635	4.37926
	SN->QN (FF)	0.59993	1.28333	7.94451

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_hs__dffsr_1	hold	CK (R)	-0.11096	-0.13309	-0.69571
	setup	CK (R)	0.68266	0.66751	1.45736
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11091	-0.13309	-0.69559
	setup	CK (R)	0.68254	0.67175	1.46548

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.45611	-0.78487	-9.95673
	setup	CK (R)	0.51371	0.81147	10.01280
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.45680	-0.78406	-9.95637
	setup	CK (R)	0.51384	0.81157	10.01280

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.11096	-0.13309	-0.69571
	setup	CK (R)	0.68266	0.66751	1.45736
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.11091	-0.13309	-0.69559
	setup	CK (R)	0.68254	0.67175	1.46548

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	hold	CK (R)	-0.45611	-0.78487	-9.95673
	setup	CK (R)	0.51371	0.81147	10.01280
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.45680	-0.78406	-9.95637
	setup	CK (R)	0.51384	0.81157	10.01280

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.59281	0.58520	1.23515
	removal	CK (R)	-0.07690	-0.09858	-0.11237
	hold	SN (R)	-0.62159	-0.83376	-7.23192
	setup	SN (R)	0.64416	0.87284	8.57129
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.59398	0.58938	1.24433
	removal	CK (R)	-0.07690	-0.09858	-0.11237
	hold	SN (R)	-0.58531	-0.79504	-7.12526
	setup	SN (R)	0.63725	0.84457	8.47549

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.59281	0.58520	1.23515
	removal	CK (R)	-0.07690	-0.09858	-0.11237
	hold	SN (R)	-0.62159	-0.83376	-7.23192
	hold	SN (R)	-0.62199	-0.83435	-7.24020
	setup	SN (R)	0.64416	0.86901	8.57129
	setup	SN (R)	0.63853	0.87284	8.56605
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.59398	0.58938	1.24433
	removal	CK (R)	-0.07690	-0.09858	-0.11237
	hold	SN (R)	-0.59054	-0.79504	-7.12526
	hold	SN (R)	-0.58531	-0.79719	-7.13508
	setup	SN (R)	0.63725	0.84457	8.45146
	setup	SN (R)	0.60366	0.83351	8.47549

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	RN ()	0.40243	0.69836	13.33370
	min_pulse_width	RN ()	0.41576	0.69836	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.39463	0.69392	13.33370
	min_pulse_width	RN ()	0.41317	0.69392	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_hs__dffsr_1	recovery	CK (R)	0.05453	0.07255	0.84081
	removal	CK (R)	-0.01506	-0.03898	-0.46556
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.05836	0.07285	0.76298
	removal	CK (R)	-0.01506	-0.03898	-0.46556

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.05453	0.07255	0.84081
	removal	CK (R)	-0.01506	-0.03898	-0.46556
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.05836	0.07285	0.76298
	removal	CK (R)	-0.01506	-0.03898	-0.46556

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	SN ()	0.62550	0.91799	13.33370
	min_pulse_width	SN ()	0.63960	0.91799	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.61536	0.87806	13.33370
	min_pulse_width	SN ()	0.60490	0.88249	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_hs__dffsr_1	min_pulse_width	CK ()	0.39457	0.45654	13.33370
	min_pulse_width	CK ()	0.46542	0.45654	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.37392	0.45654	13.33370
	min_pulse_width	CK ()	0.46098	0.45654	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_hs__dffsr_1	min_pulse_width	CK ()	0.92272	0.97123	13.33370
	min_pulse_width	CK ()	0.43443	0.69836	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.92482	0.97345	13.33370
	min_pulse_width	CK ()	0.43709	0.69836	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00571	0.00531	0.00252
	RN	0.01076	0.01042	0.00769
	SN	-0.00067	-0.02016	-0.19594
	SN	0.01167	0.01138	0.00868
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00527	0.00489	0.00301
	RN	0.01030	0.00999	0.00818
	SN	-0.00067	-0.01724	-0.15097
	SN	0.01122	0.01096	0.00905

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00606	0.00586	0.00506
	RN	-0.00067	-0.02016	-0.19594
	RN	0.01272	0.01259	0.01166
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00558	0.00537	0.00466
	RN	-0.00067	-0.01724	-0.15097
	RN	0.01223	0.01209	0.01125

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00607	0.00587	0.00509
	RN	-0.00067	-0.02013	-0.19543
	RN	0.01273	0.01260	0.01162
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00559	0.00538	0.00470
	RN	-0.00067	-0.01733	-0.15229
	RN	0.01224	0.01210	0.01124

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00569	0.00529	0.00238
	RN	0.01074	0.01040	0.00754
	SN	-0.00067	-0.02013	-0.19542
	SN	0.01165	0.01136	0.00851
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00524	0.00486	0.00284
	RN	0.01028	0.00997	0.00800
	SN	-0.00067	-0.01733	-0.15229
	SN	0.01120	0.01094	0.00894

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00128	-0.00133	-0.00133
	(!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)	0.00688	0.00672	0.00654
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00238	0.00223	0.00209
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00236	0.00222	0.00207
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00239	0.00225	0.00211
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00128	-0.00133	-0.00133
	(!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)	0.00688	0.00672	0.00654
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00238	0.00223	0.00209
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00236	0.00222	0.00207
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00239	0.00225	0.00211

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00132	0.00134	0.00133
	(!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)	0.00965	0.00955	0.00935
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00452	0.00442	0.00438
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00455	0.00445	0.00440
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00451	0.00441	0.00436
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00132	0.00134	0.00133
	(!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)	0.00965	0.00955	0.00935
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00452	0.00442	0.00438
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00455	0.00445	0.00440
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00451	0.00441	0.00436

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__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)	0.00183	0.00162	0.00143
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00667	0.00630	0.00601
sky130_osu_sc_12T_hs__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)	0.00183	0.00162	0.00143
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00667	0.00630	0.00601

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__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)	0.00528	0.00506	0.00503
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00998	0.00971	0.00943
sky130_osu_sc_12T_hs__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)	0.00528	0.00506	0.00503
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00998	0.00971	0.00943

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__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)	-0.00343	-0.00346	-0.00347
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00371	-0.00378	-0.00376
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00346	-0.00351	-0.00349
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00132	0.00113	0.00089
sky130_osu_sc_12T_hs__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)	-0.00343	-0.00346	-0.00347
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00371	-0.00378	-0.00376
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00346	-0.00351	-0.00349
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00132	0.00113	0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__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)	0.00345	0.00346	0.00348
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00375	0.00378	0.00376
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00347	0.00351	0.00349
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00776	0.00757	0.00755
sky130_osu_sc_12T_hs__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)	0.00345	0.00347	0.00348
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00375	0.00378	0.00376
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00347	0.00351	0.00349
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00776	0.00757	0.00756

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00035	-0.00064	-0.00086
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00333	0.00288	0.00248
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00329	0.00284	0.00242
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00022	-0.00055	-0.00075
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00193	0.00143	0.00107
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00035	-0.00064	-0.00086
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00333	0.00288	0.00248
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00329	0.00284	0.00242
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00022	-0.00052	-0.00074
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00193	0.00143	0.00107

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

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_12T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01613	0.01573	0.01523
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00787	0.00754	0.00739
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01125	0.01095	0.01066
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01126	0.01100	0.01070
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01584	0.01531	0.01491
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00794	0.00762	0.00753
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01025	0.00971	0.00954
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01612	0.01573	0.01523
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00787	0.00754	0.00739
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01125	0.01094	0.01066
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01126	0.01100	0.01070
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01584	0.01531	0.01491
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00794	0.00762	0.00753
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01025	0.00971	0.00954

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffs_1	38.58360
sky130_osu_sc_12T_hs__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_hs__dffs_1	0.00251	0.00503	0.00832	0.37086	0.36823
sky130_osu_sc_12T_hs__dffs_l	0.00251	0.00503	0.00832	0.29008	0.29145

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.00057	0.00064
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.00054	0.00061

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RR)	0.53537	1.90131	13.02800
	QN->Q (FR)	0.08147	1.25004	13.89330
	SN->Q (FR)	0.45927	1.96487	15.93200
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.51460	1.91733	12.41380
	QN->Q (FR)	0.08334	1.25429	13.10480
	SN->Q (FR)	0.43683	1.98212	15.27090

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RF)	0.85441	2.49057	16.38310
	QN->Q (RF)	0.02905	0.57396	7.09671
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.84005	2.57049	15.99130
	QN->Q (RF)	0.02956	0.57747	6.84946

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RR)	0.77093	1.73090	9.52274
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.75237	1.75676	9.32665

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RF)	0.41917	0.88926	3.92481
	SN->QN (FF)	0.34017	0.95642	6.82218
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.39958	0.87853	3.87024
	SN->QN (FF)	0.31957	0.94540	6.72739

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_hs__dffs_1	hold	CK (R)	-0.06489	-0.08829	-0.53817
	setup	CK (R)	0.36497	0.36196	1.24754
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.06482	-0.08829	-0.53762
	setup	CK (R)	0.36606	0.36234	1.25985

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.40620	-0.74065	-9.77995
	setup	CK (R)	0.47396	0.78021	9.87281
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.40484	-0.74317	-9.77743
	setup	CK (R)	0.47729	0.78034	9.87286

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.06489	-0.08829	-0.53817
	setup	CK (R)	0.36497	0.36196	1.24754
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.06482	-0.08829	-0.53762
	setup	CK (R)	0.36606	0.36234	1.25985

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	hold	CK (R)	-0.40620	-0.74065	-9.77995
	setup	CK (R)	0.47396	0.78021	9.87281
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.40484	-0.74317	-9.77743
	setup	CK (R)	0.47729	0.78034	9.87286

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.06249	0.08000	0.54318
	removal	CK (R)	-0.01765	-0.04297	-0.31638
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.06267	0.08018	0.52185
	removal	CK (R)	-0.01765	-0.04297	-0.31638

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	recovery	CK (R)	0.06249	0.08000	0.54318
	removal	CK (R)	-0.01765	-0.04297	-0.31638
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.06267	0.08018	0.52185
	removal	CK (R)	-0.01765	-0.04297	-0.31638

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	SN ()	0.32374	0.70723	13.33370
	min_pulse_width	SN ()	0.33083	0.70501	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.31287	0.68283	13.33370
	min_pulse_width	SN ()	0.31027	0.68283	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_hs__dffs_1	min_pulse_width	CK ()	0.16735	0.45654	13.33370
	min_pulse_width	CK ()	0.42900	0.45654	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.16046	0.45654	13.33370
	min_pulse_width	CK ()	0.42212	0.45654	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_hs__dffs_1	min_pulse_width	CK ()	0.60401	0.68505	13.33370
	min_pulse_width	CK ()	0.39627	0.66508	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.60401	0.68505	13.33370
	min_pulse_width	CK ()	0.39627	0.66508	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00478	0.00430	0.00163
	SN	-0.00067	-0.01993	-0.19225
	SN	0.01018	0.00979	0.00706
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00429	0.00384	0.00202
	SN	-0.00067	-0.01720	-0.15038
	SN	0.00968	0.00933	0.00742

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00534	0.00510	0.00406
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00484	0.00461	0.00394

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00534	0.00510	0.00409
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00485	0.00462	0.00396

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00476	0.00428	0.00149
	SN	-0.00067	-0.01985	-0.19088
	SN	0.01016	0.00977	0.00684
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00427	0.00382	0.00185
	SN	-0.00067	-0.01725	-0.15108
	SN	0.00966	0.00931	0.00727

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00130	-0.00136	-0.00135
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00555	0.00535	0.00511
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00215	0.00200	0.00187
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00130	-0.00136	-0.00135
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00555	0.00535	0.00511
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00215	0.00200	0.00187

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00134	0.00136	0.00135
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00855	0.00843	0.00829
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00416	0.00404	0.00400
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00134	0.00136	0.00135
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00855	0.00843	0.00829
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00416	0.00404	0.00400

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00254	-0.00256	-0.00256
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00169	0.00150	0.00137
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00254	-0.00255	-0.00255
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00170	0.00151	0.00137

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00255	0.00257	0.00256
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00556	0.00529	0.00522
sky130_osu_sc_12T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00255	0.00257	0.00256
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00556	0.00529	0.00522

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00031	-0.00062	-0.00081
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00027	-0.00057	-0.00079
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00176	0.00125	0.00091
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00031	-0.00062	-0.00081
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00027	-0.00057	-0.00079
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00176	0.00125	0.00091

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01466	0.01426	0.01375
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00773	0.00740	0.00727
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01462	0.01402	0.01370
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00788	0.00757	0.00749
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00973	0.00919	0.00903
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01466	0.01426	0.01375
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00773	0.00740	0.00727
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01462	0.01402	0.01370
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00788	0.00757	0.00749
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00973	0.00918	0.00903

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dff_1	32.23440
sky130_osu_sc_12T_hs__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_hs__dff_1	0.00266	0.00813	0.35615
sky130_osu_sc_12T_hs__dff_l	0.00266	0.00812	0.27953

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.00055	0.00058
sky130_osu_sc_12T_hs__dff_l	0.00000	0.00052	0.00055

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RR)	0.47394	1.44577	9.20147
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.45448	1.45888	8.85554

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RF)	0.76288	1.21277	4.35921
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.74767	1.21025	4.30505

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_hs__dff_1	hold	CK (R)	-0.07252	-0.09683	-0.61575
	setup	CK (R)	0.30106	0.30033	1.24605
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.07246	-0.09680	-0.61552
	setup	CK (R)	0.29954	0.29896	1.26198

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	hold	CK (R)	-0.40393	-0.75011	-9.87160
	setup	CK (R)	0.46132	0.79452	9.99267
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.40134	-0.75096	-9.87021
	setup	CK (R)	0.46158	0.79452	9.99264

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dff_1	min_pulse_width	CK ()	0.16046	0.45654	13.33370
	min_pulse_width	CK ()	0.42212	0.45654	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.15358	0.45654	13.33370
	min_pulse_width	CK ()	0.41523	0.45654	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_hs__dff_1	min_pulse_width	CK ()	0.53614	0.65621	13.33370
	min_pulse_width	CK ()	0.37181	0.67617	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.53865	0.65621	13.33370
	min_pulse_width	CK ()	0.37181	0.67617	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01011	0.00941	0.00887
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00910	0.00839	0.00790

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01091	0.01047	0.01005
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00991	0.00946	0.00909

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00126	-0.00131	-0.00130
	!CK	0.00000	0.00000	0.00000
	!CK	0.00505	0.00487	0.00465
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00126	-0.00131	-0.00130
	!CK	0.00000	0.00000	0.00000
	!CK	0.00505	0.00487	0.00465

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00130	0.00132	0.00130
	!CK	0.00000	0.00000	0.00000
	!CK	0.00891	0.00875	0.00859
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00130	0.00132	0.00130
	!CK	0.00000	0.00000	0.00000
	!CK	0.00891	0.00875	0.00859

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00033	-0.00064	-0.00083
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00027	-0.00056	-0.00078
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00034	-0.00064	-0.00083
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00027	-0.00057	-0.00078

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__dff_1	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00771	0.00739	0.00725
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01414	0.01375	0.01329
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01486	0.01427	0.01389
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00784	0.00752	0.00745
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00771	0.00739	0.00725
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01414	0.01375	0.01329
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01486	0.01427	0.01389
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00784	0.00752	0.00745

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__inv_1	4.39560
sky130_osu_sc_12T_hs__inv_10	21.97800
sky130_osu_sc_12T_hs__inv_2	6.34920
sky130_osu_sc_12T_hs__inv_3	8.30280
sky130_osu_sc_12T_hs__inv_4	10.25640
sky130_osu_sc_12T_hs__inv_6	14.16360
sky130_osu_sc_12T_hs__inv_8	18.07080
sky130_osu_sc_12T_hs__inv_l	4.38570

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__inv_1	0.00260	0.35655
sky130_osu_sc_12T_hs__inv_10	0.02302	3.59339
sky130_osu_sc_12T_hs__inv_2	0.00480	0.73048
sky130_osu_sc_12T_hs__inv_3	0.00709	1.08853
sky130_osu_sc_12T_hs__inv_4	0.00933	1.45446
sky130_osu_sc_12T_hs__inv_6	0.01396	2.19792
sky130_osu_sc_12T_hs__inv_8	0.01849	2.88374
sky130_osu_sc_12T_hs__inv_l	0.00207	0.28344

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00006	0.00008
sky130_osu_sc_12T_hs__inv_10	0.00000	0.00061	0.00080
sky130_osu_sc_12T_hs__inv_2	0.00000	0.00012	0.00016
sky130_osu_sc_12T_hs__inv_3	0.00000	0.00018	0.00024
sky130_osu_sc_12T_hs__inv_4	0.00000	0.00024	0.00032
sky130_osu_sc_12T_hs__inv_6	0.00000	0.00037	0.00048
sky130_osu_sc_12T_hs__inv_8	0.00000	0.00049	0.00064
sky130_osu_sc_12T_hs__inv_l	0.00000	0.00005	0.00006

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (FR)**	0.08036	1.20628	13.32800
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.06814	0.76003	13.34500
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.05486	1.00745	13.29250
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.05643	0.93516	13.37180
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.05248	0.87711	13.30380
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.05499	0.82007	13.39160
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.06067	0.78224	13.30590
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.08444	1.22852	12.72690

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__inv_1	**A->Y (RF)**	0.02675	0.53211	6.45658
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.03223	0.39554	6.61816
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.02112	0.47979	6.52355
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.02240	0.45972	6.61019
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.02180	0.43854	6.59223
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02489	0.41897	6.64334
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02836	0.40483	6.61861
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02814	0.54510	6.36316

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00242	0.00236	0.00232
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.01972	0.01896	0.02017
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00414	0.00408	0.00410
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00638	0.00627	0.00638
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00811	0.00798	0.00808
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01202	0.01194	0.01222
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01591	0.01577	0.01608
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00192	0.00186	0.00099

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00034	-0.00038	-0.00041
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00631	-0.00641	-0.00603
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00119	-0.00125	-0.00127
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00150	-0.00159	-0.00159
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00240	-0.00251	-0.00245
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00363	-0.00379	-0.00364
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00493	-0.00505	-0.00481
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00024	-0.00027	-0.00029

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_12T_hs__mux2_1	0.29711	0.29788	0.00538	0.34688

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.00020	0.00024

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (RR)	-	0.02969	0.64870	8.26255
	A1->Y (RR)	-	0.03949	0.65502	8.27197
	S0->Y (RR)	(!A0 * A1)	0.08353	0.79077	7.81030
	S0->Y (FR)	(A0 * !A1)	0.08196	0.95663	9.36246

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__mux2_1	A0->Y (FF)	-	0.02630	0.50715	6.20471
	A1->Y (FF)	-	0.02207	0.50118	6.18812
	S0->Y (FF)	(!A0 * A1)	0.17337	0.75461	6.60576
	S0->Y (RF)	(A0 * !A1)	0.02900	0.52765	6.00085

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00240	-0.00240	-0.00240
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00158	-0.00158	-0.00158
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00338	0.00314	0.00309
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00144	-0.00173	-0.00186

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00240	0.00240	0.00240
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00158	0.00158	0.00158
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00047	0.00018	0.00007
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00642	0.00617	0.00612

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00062	-0.00062	-0.00062

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00062	0.00062	0.00062

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00074	-0.00074	-0.00075

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00074	0.00074	0.00075

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00049	-0.00079	-0.00091
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00048	-0.00076	-0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.00498	0.00472	0.00469
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00481	0.00458	0.00452

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nand2_1	6.34920
sky130_osu_sc_12T_hs__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nand2_1	0.00259	0.00257	0.35283
sky130_osu_sc_12T_hs__nand2_l	0.00202	0.00205	0.28287

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00008	0.00016
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.00006	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (FR)	0.08444	1.20789	13.28640
	B->Y (FR)	0.09704	1.18636	12.97110
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.08558	1.23083	12.73050
	B->Y (FR)	0.10141	1.24198	12.73300

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nand2_1	A->Y (RF)	0.04292	0.66470	7.75476
	B->Y (RF)	0.04773	0.64638	7.32190
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.04299	0.67518	7.56945
	B->Y (RF)	0.04744	0.65863	7.16867

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00254	0.00248	0.00246
	B	0.00000	0.00000	0.00000
	B	0.00311	0.00304	0.00302
sky130_osu_sc_12T_hs__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00193	0.00188	0.00101
	B	0.00000	0.00000	0.00000
	B	0.00236	0.00221	0.00146

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00021	-0.00026	-0.00027
	B	0.00000	0.00000	0.00000
	B	-0.00019	-0.00023	-0.00026
sky130_osu_sc_12T_hs__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00013	-0.00016	-0.00018
	B	0.00000	0.00000	0.00000
	B	-0.00012	-0.00015	-0.00017

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00155	-0.00156	-0.00157
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00109	-0.00110	-0.00110

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00156	0.00161	0.00157
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00110	0.00113	0.00111

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00144	-0.00145	-0.00144
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00102	-0.00102	-0.00103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00144	0.00145	0.00145
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00102	0.00102	0.00103

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nor2_1	6.34920
sky130_osu_sc_12T_hs__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nor2_1	0.00252	0.00282	0.16697
sky130_osu_sc_12T_hs__nor2_l	0.00192	0.00215	0.13312

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00007	0.00008
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.00006	0.00008

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (FR)	0.20647	1.61776	13.63150
	B->Y (FR)	0.18104	1.55470	13.33750
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.20560	1.66315	13.27420
	B->Y (FR)	0.18646	1.58996	12.71720

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__nor2_1	A->Y (RF)	0.03070	0.45798	4.84436
	B->Y (RF)	0.02795	0.45115	4.82897
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.03091	0.46530	4.74079
	B->Y (RF)	0.02884	0.45989	4.72802

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00306	0.00299	0.00298
	B	0.00000	0.00000	0.00000
	B	0.00263	0.00253	0.00249
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00225	0.00220	0.00218
	B	0.00000	0.00000	0.00000
	B	0.00199	0.00192	0.00188

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00019	0.00011	0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00029	-0.00030	-0.00038
sky130_osu_sc_12T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00016	0.00010	0.00006
	B	0.00000	0.00000	0.00000
	B	-0.00018	-0.00018	-0.00024

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00127	-0.00132	-0.00132
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00085	-0.00089	-0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00131	0.00132	0.00132
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00089	0.00089	0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00080	-0.00081	-0.00080
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00055	-0.00055	-0.00055

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00083	0.00083	0.00081
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00057	0.00057	0.00055

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__oai21_l	0.00257	0.00264	0.00228	0.16781

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.00008	0.00014

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (FR)	0.25329	1.63207	13.46610
	A1->Y (FR)	0.28836	1.70782	13.75910
	B0->Y (FR)	0.10761	1.03379	9.98872

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai21_l	A0->Y (RF)	0.05646	0.54344	5.38061
	A1->Y (RF)	0.06201	0.54479	5.36745
	B0->Y (RF)	0.04665	0.56255	5.83623

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00347	0.00337	0.00332
	A1	0.00000	0.00000	0.00000
	A1	0.00396	0.00388	0.00384
	B0	0.00271	0.00262	0.00256

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00019	0.00019	0.00013
	A1	0.00000	0.00000	0.00000
	A1	0.00072	0.00063	0.00057
	B0	0.00099	0.00095	0.00089

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00081	-0.00081	-0.00081
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00131	-0.00134	-0.00134
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00138	-0.00138	-0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00083	0.00084	0.00081
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00133	0.00134	0.00134
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00138	0.00139	0.00138

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00122	-0.00127	-0.00127
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00129	-0.00133	-0.00133
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00136	-0.00137	-0.00136

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00126	0.00127	0.00127
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00133	0.00133	0.00133
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00136	0.00137	0.00136

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00114	-0.00116	-0.00118

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00118	0.00118	0.00118

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__oai22_l	0.00238	0.00253	0.00272	0.00266	0.17049

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00013	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (FR)	0.31080	1.71761	13.71980
	A1->Y (FR)	0.28147	1.64810	13.44130
	B0->Y (FR)	0.19032	1.55309	13.34330
	B1->Y (FR)	0.22400	1.62497	13.62670

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (RF)	0.07676	0.57305	5.45973
	A1->Y (RF)	0.06636	0.55979	5.43441
	B0->Y (RF)	0.05686	0.58039	5.89463
	B1->Y (RF)	0.06821	0.59438	5.93938

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00485	0.00477	0.00475
	A1	0.00435	0.00426	0.00420
	B0	0.00325	0.00316	0.00309
	B1	0.00379	0.00370	0.00364

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00095	0.00087	0.00080
	A1	0.00047	0.00047	0.00039
	B0	0.00046	0.00046	0.00037
	B1	0.00096	0.00086	0.00078

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00124	-0.00130	-0.00129
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00124	-0.00130	-0.00129
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00124	-0.00130	-0.00129
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00131	-0.00132	-0.00132

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00128	0.00130	0.00129
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00128	0.00130	0.00129
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00128	0.00130	0.00129
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00132	0.00134	0.00132

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00078	-0.00079	-0.00079
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00078	-0.00079	-0.00079
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00124	-0.00127	-0.00128
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00131	-0.00132	-0.00131

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00081	0.00082	0.00079
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00081	0.00082	0.00079
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00127	0.00127	0.00128
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00131	0.00133	0.00132

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00079	-0.00081	-0.00079
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00079	-0.00081	-0.00079
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00148	-0.00152	-0.00151
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00150	-0.00151	-0.00155

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00082	0.00083	0.00080
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00082	0.00082	0.00080
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00151	0.00152	0.00151
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00155	0.00156	0.00156

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00124	-0.00128	-0.00128
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00124	-0.00129	-0.00128
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00151	-0.00155	-0.00155
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00154	-0.00154	-0.00158

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00127	0.00128	0.00128
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00127	0.00129	0.00128
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00154	0.00155	0.00155
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00158	0.00160	0.00159

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__or2_1	8.30280
sky130_osu_sc_12T_hs__or2_2	10.25640
sky130_osu_sc_12T_hs__or2_4	14.16360
sky130_osu_sc_12T_hs__or2_8	21.97800
sky130_osu_sc_12T_hs__or2_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__or2_1	0.00285	0.00266	0.35560
sky130_osu_sc_12T_hs__or2_2	0.00285	0.00266	0.73081
sky130_osu_sc_12T_hs__or2_4	0.00286	0.00266	1.44889
sky130_osu_sc_12T_hs__or2_8	0.00286	0.00266	2.83415
sky130_osu_sc_12T_hs__or2_l	0.00218	0.00204	0.28281

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00013	0.00016
sky130_osu_sc_12T_hs__or2_2	0.00000	0.00018	0.00024
sky130_osu_sc_12T_hs__or2_4	0.00000	0.00028	0.00040
sky130_osu_sc_12T_hs__or2_8	0.00000	0.00049	0.00072
sky130_osu_sc_12T_hs__or2_l	0.00000	0.00011	0.00014

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (RR)	0.13192	1.10106	8.80345
	B->Y (RR)	0.12543	1.08366	8.67800
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.12852	0.94684	9.01266
	B->Y (RR)	0.12107	0.93263	8.92405
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.16352	0.88793	9.36384
	B->Y (RR)	0.15578	0.87623	9.29702
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.23665	0.90172	9.81130
	B->Y (RR)	0.22884	0.89330	9.76618
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.12940	1.12883	8.41441
	B->Y (RR)	0.12401	1.11285	8.30627

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (FF)	0.37736	1.00718	7.36561
	B->Y (FF)	0.33005	0.93083	6.87489
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.48055	1.10632	7.78188
	B->Y (FF)	0.43336	1.02849	7.36297
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.71165	1.35615	8.40337
	B->Y (FF)	0.66438	1.27430	8.07876
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	1.17458	1.86394	9.27413
	B->Y (FF)	1.12701	1.77765	9.05108
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.35856	0.99011	6.95827
	B->Y (FF)	0.31717	0.90631	6.27812

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00247	0.00225	0.00209
	B	0.00000	0.00000	0.00000
	B	0.00197	0.00181	0.00167
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00414	0.00405	0.00392
	B	0.00000	0.00000	0.00000
	B	0.00362	0.00363	0.00353
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00798	0.00811	0.00812
	B	0.00000	0.00000	0.00000
	B	0.00744	0.00772	0.00780
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01553	0.01614	0.01627
	B	0.00000	0.00000	0.00000
	B	0.01501	0.01570	0.01604
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00192	0.00177	0.00165
	B	0.00000	0.00000	0.00000
	B	0.00158	0.00146	0.00135

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00547	0.00533	0.00529
	B	0.00000	0.00000	0.00000
	B	0.00478	0.00472	0.00465
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00666	0.00677	0.00673
	B	0.00000	0.00000	0.00000
	B	0.00598	0.00613	0.00608
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00966	0.01018	0.01025
	B	0.00000	0.00000	0.00000
	B	0.00897	0.00951	0.00959
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01565	0.01672	0.01738
	B	0.00000	0.00000	0.00000
	B	0.01497	0.01605	0.01666
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00412	0.00402	0.00398
	B	0.00000	0.00000	0.00000
	B	0.00364	0.00359	0.00354

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00130	-0.00134	-0.00133
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00128	-0.00134	-0.00133
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00129	-0.00132	-0.00133
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00129	-0.00132	-0.00133
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00087	-0.00090	-0.00090

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00133	0.00134	0.00133
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00133	0.00134	0.00133
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00133	0.00132	0.00133
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00133	0.00132	0.00133
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00089	0.00090	0.00090

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00081	-0.00081	-0.00081
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00081	-0.00081	-0.00081
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00081	-0.00081	-0.00081
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00081	-0.00081	-0.00081
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00054	-0.00054	-0.00054

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00084	0.00081
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00083	0.00084	0.00081
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00084	0.00084	0.00081
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00084	0.00084	0.00081
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00056	0.00057	0.00054

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tbufi_1	8.30280
sky130_osu_sc_12T_hs__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tbufi_1	0.00280	0.00364	0.17062
sky130_osu_sc_12T_hs__tbufi_l	0.00216	0.00282	0.13188

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00009	0.00016
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (FR)	0.16865	1.53327	13.33050
	OE->Y (FR)	0.12205	0.52455	4.55481
	OE->Y (RR)	0.21018	1.42669	8.98388
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.17931	1.57566	12.64720
	OE->Y (FR)	0.11270	0.49040	4.28370
	OE->Y (RR)	0.21149	1.48017	8.56384

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tbufi_1	A->Y (RF)	0.04156	0.54793	5.71416
	OE->Y (FF)	0.12256	0.52614	4.55740
	OE->Y (RF)	0.03988	0.52085	5.36645
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.04211	0.54924	5.46834
	OE->Y (FF)	0.11373	0.49031	4.28364
	OE->Y (RF)	0.04054	0.52349	5.16907

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00246	0.00235	0.00229
	OE	0.00000	0.00000	0.00000
	OE	0.00218	0.00190	0.00181
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00187	0.00179	0.00174
	OE	0.00000	0.00000	0.00000
	OE	0.00163	0.00142	0.00135

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00029	-0.00030	-0.00037
	OE	0.00000	0.00000	0.00000
	OE	0.00156	0.00130	0.00118
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00018	-0.00018	-0.00024
	OE	0.00000	0.00000	0.00000
	OE	0.00110	0.00089	0.00081

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00125	-0.00126	-0.00125
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00119	-0.00119	-0.00118
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00088	-0.00089	-0.00088
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00084	-0.00084	-0.00084

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00125	0.00126	0.00125
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00120	0.00121	0.00119
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00088	0.00089	0.00088
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00086	0.00086	0.00085

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00087	0.00059	0.00049
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00077	0.00050	0.00040
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00062	0.00041	0.00033
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00054	0.00033	0.00025

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00291	0.00262	0.00259
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00300	0.00275	0.00266
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00221	0.00201	0.00198
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00229	0.00210	0.00204

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tnbufi_1	8.30280
sky130_osu_sc_12T_hs__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tnbufi_1	0.00279	0.00409	0.17061
sky130_osu_sc_12T_hs__tnbufi_l	0.00206	0.00311	0.13187

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.00010	0.00012
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (FR)	0.17000	1.53278	13.32940
	OE->Y (RR)	0.03246	0.28862	4.28332
	OE->Y (FR)	0.17981	1.58564	13.59920
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.17554	1.57388	12.64140
	OE->Y (RR)	0.03303	0.28834	4.28299
	OE->Y (FR)	0.18398	1.63777	13.18530

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__tnbufi_1	A->Y (RF)	0.04046	0.54746	5.71341
	OE->Y (RF)	0.03204	0.28861	4.28329
	OE->Y (FF)	0.12823	0.73054	5.90174
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.03961	0.54676	5.46615
	OE->Y (RF)	0.03269	0.28834	4.28300
	OE->Y (FF)	0.12958	0.70915	5.27204

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00256	0.00245	0.00239
	OE	0.00000	0.00000	0.00000
	OE	0.00578	0.00561	0.00559
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00192	0.00184	0.00179
	OE	0.00000	0.00000	0.00000
	OE	0.00446	0.00431	0.00431

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00042	-0.00042	-0.00049
	OE	0.00000	0.00000	0.00000
	OE	0.00525	0.00508	0.00504
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00031	-0.00036
	OE	0.00000	0.00000	0.00000
	OE	0.00401	0.00385	0.00385

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00104	-0.00105	-0.00104
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00098	-0.00100	-0.00098
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00070	-0.00070	-0.00070
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00065	-0.00067	-0.00066

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00104	0.00105	0.00104
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00099	0.00100	0.00099
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00070	0.00070	0.00070
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00067	0.00068	0.00067

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00151	-0.00185	-0.00197
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00144	-0.00180	-0.00195
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00102	-0.00127	-0.00136
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00098	-0.00125	-0.00135

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00448	0.00429	0.00428
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00440	0.00420	0.00420
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00346	0.00331	0.00330
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00341	0.00326	0.00325

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xnor2_l	0.00559	0.00468	0.17182

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.00025	0.00028

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (RR)	B	0.27634	1.50154	9.17141
	A->Y (FR)	!B	0.22503	1.59099	13.38570
	B->Y (RR)	A	0.23670	1.46154	9.09217
	B->Y (FR)	!A	0.24912	1.64980	13.64640

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (FF)	B	0.20283	0.81700	6.32986
	A->Y (RF)	!B	0.05658	0.53679	5.39594
	B->Y (FF)	A	0.19309	0.80937	6.31671
	B->Y (RF)	!A	0.06128	0.54314	5.40810

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00219	0.00189	0.00172
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00611	0.00576	0.00567
	B	A	0.00000	0.00000	0.00000
	B	A	0.00130	0.00106	0.00092
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00615	0.00591	0.00586

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00706	0.00676	0.00662
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00166	0.00139	0.00121
	B	A	0.00000	0.00000	0.00000
	B	A	0.00653	0.00640	0.00634
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00202	0.00170	0.00153

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xor2_1	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xor2_1	0.00559	0.00472	0.16582

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.00025	0.00028

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (RR)	!B	0.30263	1.52485	9.13412
	A->Y (FR)	B	0.24842	1.64862	13.60500
	B->Y (RR)	!A	0.24680	1.48038	9.08084
	B->Y (FR)	A	0.26920	1.67733	13.63600

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (FF)	!B	0.20968	0.81819	6.30074
	A->Y (RF)	B	0.05236	0.55925	5.67652
	B->Y (FF)	!A	0.20113	0.81129	6.27881
	B->Y (RF)	A	0.05746	0.53799	5.33439

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00694	0.00661	0.00655
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00150	0.00102	0.00083
	B	A	0.00000	0.00000	0.00000
	B	A	0.00687	0.00662	0.00658
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00120	0.00096	0.00081

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00127	0.00092	0.00071
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00756	0.00733	0.00728
	B	A	0.00000	0.00000	0.00000
	B	A	0.00128	0.00095	0.00077
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00664	0.00653	0.00645

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ss_1P44_-40C.ccs
Cell Library: Process , Voltage 1.44, Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__ant	4.39560
sky130_osu_sc_12T_hs__tiehi	4.39560
sky130_osu_sc_12T_hs__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_hs__ant	0.05784
sky130_osu_sc_12T_hs__tiehi	0.00000
sky130_osu_sc_12T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__ant	0.00000	31382.00000	62763.90000
sky130_osu_sc_12T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__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_hs__ant	0.00000	0.00000	0.00000
	-0.00147	0.00287	0.05992

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	0.54734	0.51811	0.08631