sky130_osu_sc_12T_hs_tt_1P35_25C.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_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.01042	0.01045	0.00810	0.70422	0.29975	0.63780
sky130_osu_sc_12T_hs__addf_l	0.01042	0.01045	0.00810	0.50030	0.30027	0.63792

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.02281	0.02684
sky130_osu_sc_12T_hs__addf_l	0.00000	0.06067	0.10370

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)	0.20135	1.86908	22.04150
	B->CO (RR)	0.19346	1.83197	21.78530
	CI->CO (RR)	0.19055	1.89053	22.58870
	CON->CO (FR)	0.04198	0.92330	12.33910
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.19673	1.72239	18.16760
	B->CO (RR)	0.18926	1.69883	18.17480
	CI->CO (RR)	0.18586	1.74413	18.73190
	CON->CO (FR)	0.04761	0.95476	11.66980

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)	0.39843	2.96266	33.78330
	B->CO (FF)	0.35895	2.84653	32.75720
	CI->CO (FF)	0.35323	2.89722	33.64840
	CON->CO (RF)	0.02373	0.54947	7.53006
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.38810	2.63773	26.68980
	B->CO (FF)	0.34963	2.53746	25.95020
	CI->CO (FF)	0.34292	2.57248	26.56950
	CON->CO (RF)	0.02570	0.56546	7.26966

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)	0.30615	1.39697	12.26410
	B->CON (FR)	0.27039	1.32401	11.95540
	CI->CON (FR)	0.26121	1.33183	12.16990
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.29239	1.38395	12.26210
	B->CON (FR)	0.25738	1.31166	11.95580
	CI->CON (FR)	0.24767	1.31879	12.17200

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)	0.10408	0.59435	5.84143
	B->CON (RF)	0.09897	0.60547	6.20787
	CI->CON (RF)	0.09319	0.61753	6.40985
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.10103	0.59165	5.84379
	B->CON (RF)	0.09606	0.60475	6.20933
	CI->CON (RF)	0.09014	0.61481	6.41136

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)	0.55849	2.94066	27.99920
	B->S (-R)	0.54614	2.89795	27.56570
	CI->S (-R)	0.50994	2.86654	27.84640
	CON->S (RR)	0.11927	0.89461	7.97782
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.53810	2.92538	27.99010
	B->S (-R)	0.52644	2.88330	27.55670
	CI->S (-R)	0.48967	2.85112	27.83650
	CON->S (RR)	0.11934	0.89479	7.97879

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)	0.37026	1.61301	14.01290
	B->S (-F)	0.36861	1.56085	14.01790
	CI->S (-F)	0.35882	1.63149	14.55220
	CON->S (FF)	0.16386	0.77486	5.89101
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.36267	1.60633	14.01400
	B->S (-F)	0.36140	1.55580	14.01570
	CI->S (-F)	0.35108	1.62611	14.54990
	CON->S (FF)	0.16384	0.77487	5.89171

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	0.00164	0.00156	0.00169
	B	0.00190	0.00189	0.00205
	CI	0.00190	0.00195	0.00217
sky130_osu_sc_12T_hs__addf_l	A	0.00149	0.00141	0.00152
	B	0.00176	0.00174	0.00185
	CI	0.00176	0.00181	0.00196

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00501	0.00501	0.00556
	B	0.00491	0.00499	0.00555
	CI	0.00432	0.00445	0.00504
sky130_osu_sc_12T_hs__addf_l	A	0.00490	0.00489	0.00522
	B	0.00479	0.00485	0.00518
	CI	0.00420	0.00432	0.00469

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00500	0.00498	0.00513
	B	0.00490	0.00494	0.00510
	CI	0.00431	0.00441	0.00460
sky130_osu_sc_12T_hs__addf_l	A	0.00489	0.00486	0.00501
	B	0.00479	0.00483	0.00498
	CI	0.00420	0.00430	0.00448

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00161	0.00153	0.00151
	B	0.00187	0.00186	0.00180
	CI	0.00190	0.00194	0.00202
sky130_osu_sc_12T_hs__addf_l	A	0.00147	0.00139	0.00139
	B	0.00173	0.00170	0.00169
	CI	0.00176	0.00180	0.00189

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00501	0.00501	0.00547
	B	0.00491	0.00498	0.00548
	CI	0.00432	0.00445	0.00494
sky130_osu_sc_12T_hs__addf_l	A	0.00490	0.00489	0.00534
	B	0.00480	0.00487	0.00535
	CI	0.00420	0.00433	0.00481

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01006	0.01008	0.01011
	B	0.00931	0.00906	0.00975
	CI	0.00831	0.00825	0.00840
sky130_osu_sc_12T_hs__addf_l	A	0.01006	0.01008	0.01013
	B	0.00931	0.00907	0.00975
	CI	0.00831	0.00825	0.00840

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00519	0.00545	0.68112	0.69963	0.69822
sky130_osu_sc_12T_hs__addh_l	0.00509	0.00539	0.49998	0.69852	0.50789

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.02005	0.02113
sky130_osu_sc_12T_hs__addh_l	0.00000	0.09965	0.10086

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)	0.18021	1.00349	8.83184
	B->CO (RR)	0.18474	1.00407	9.02007
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.13931	0.93396	7.53472
	B->CO (RR)	0.14255	0.93144	7.64367

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)	0.15633	0.84013	7.13518
	B->CO (FF)	0.16315	0.85393	7.23785
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.13391	0.74641	5.84753
	B->CO (FF)	0.14062	0.76093	5.95860

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)	0.24911	1.04995	8.87637
	B->CON (RR)	0.25311	1.04941	9.06501
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.19228	0.92315	7.79852
	B->CON (RR)	0.19539	0.91722	7.90053

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)	0.20038	0.87395	7.24321
	B->CON (FF)	0.19985	0.88103	7.34402
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.16046	0.74183	6.00403
	B->CON (FF)	0.16158	0.75148	6.12047

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)	0.28712	1.81702	18.28090
	B->S (FR)	0.28674	1.82516	18.41210
	CON->S (FR)	0.04462	0.92966	12.39570
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.23651	1.55678	14.09140
	B->S (FR)	0.23779	1.56695	14.19370
	CON->S (FR)	0.04808	0.96026	11.79240

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)	0.33054	1.92507	19.08370
	B->S (RF)	0.33471	1.92272	19.27540
	CON->S (RF)	0.02968	0.66877	9.14735
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.25461	1.48190	12.64900
	B->S (RF)	0.25767	1.47687	12.74090
	CON->S (RF)	0.02508	0.56727	7.34777

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	0.00255	0.00244	0.00242
	B	0.00000	0.00000	0.00000
	B	0.00238	0.00229	0.00221
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00219	0.00206	0.00220
	B	0.00000	0.00000	0.00000
	B	0.00202	0.00190	0.00203

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	0.00353	0.00342	0.00341
	B	0.00000	0.00000	0.00000
	B	0.00368	0.00368	0.00370
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00319	0.00307	0.00325
	B	0.00000	0.00000	0.00000
	B	0.00334	0.00332	0.00352

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	0.00255	0.00244	0.00243
	B	0.00000	0.00000	0.00000
	B	0.00237	0.00228	0.00221
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00220	0.00206	0.00223
	B	0.00000	0.00000	0.00000
	B	0.00202	0.00189	0.00196

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	0.00353	0.00342	0.00342
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00368	0.00372
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00319	0.00306	0.00321
	B	0.00000	0.00000	0.00000
	B	0.00334	0.00331	0.00347

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	0.00354	0.00342	0.00342
	B	0.00000	0.00000	0.00000
	B	0.00369	0.00369	0.00371
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00320	0.00307	0.00331
	B	0.00000	0.00000	0.00000
	B	0.00335	0.00333	0.00358

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	0.00255	0.00244	0.00246
	B	0.00000	0.00000	0.00000
	B	0.00238	0.00228	0.00224
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00219	0.00206	0.00221
	B	0.00000	0.00000	0.00000
	B	0.00202	0.00190	0.00196

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)	0.38505	0.36687	0.09664
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.38614	0.36789	0.09691

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)	0.38496	0.36618	0.09385
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.38607	0.36723	0.09406

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00273	0.00284	0.69290
sky130_osu_sc_12T_hs__and2_2	0.00273	0.00285	1.37399
sky130_osu_sc_12T_hs__and2_4	0.00273	0.00284	2.70347
sky130_osu_sc_12T_hs__and2_6	0.00276	0.00284	3.99971
sky130_osu_sc_12T_hs__and2_8	0.00273	0.00285	5.25578
sky130_osu_sc_12T_hs__and2_l	0.00212	0.00220	0.50402

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.01028	0.01598
sky130_osu_sc_12T_hs__and2_2	0.00000	0.01601	0.01810
sky130_osu_sc_12T_hs__and2_4	0.00000	0.02747	0.02984
sky130_osu_sc_12T_hs__and2_6	0.00000	0.03892	0.04370
sky130_osu_sc_12T_hs__and2_8	0.00000	0.05038	0.05756
sky130_osu_sc_12T_hs__and2_l	0.00000	0.10549	0.16856

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)	0.10965	0.83483	7.59281
	B->Y (RR)	0.11540	0.83719	7.71275
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.12107	0.74701	7.77956
	B->Y (RR)	0.12686	0.74283	7.87298
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.16412	0.74373	8.26328
	B->Y (RR)	0.16997	0.73176	8.31962
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.20756	0.77548	8.57019
	B->Y (RR)	0.21325	0.75899	8.60136
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.24954	0.81713	8.86866
	B->Y (RR)	0.25527	0.79776	8.85295
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.11181	0.88062	7.36120
	B->Y (RR)	0.11750	0.88463	7.46724

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)**	0.10594	0.66360	5.55474
	B->Y (FF)	0.11085	0.67849	5.66985
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.12730	0.66017	5.88182
	B->Y (FF)	0.13118	0.66936	5.97856
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.18366	0.70850	6.45338
	B->Y (FF)	0.18452	0.71260	6.51146
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.24221	0.76726	6.84417
	B->Y (FF)	0.23972	0.76738	6.89053
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.29724	0.82650	7.13669
	B->Y (FF)	0.29202	0.82193	7.16833
sky130_osu_sc_12T_hs__and2_l	**A->Y (FF)**	0.10431	0.64849	4.89716
	B->Y (FF)	0.11376	0.66861	4.98869

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	0.00174	0.00151	0.00232
	B	0.00000	0.00000	0.00000
	B	0.00178	0.00153	0.00193
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00318	0.00310	0.00388
	B	0.00000	0.00000	0.00000
	B	0.00321	0.00313	0.00353
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00645	0.00668	0.00732
	B	0.00000	0.00000	0.00000
	B	0.00650	0.00673	0.00701
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.00973	0.01016	0.01087
	B	0.00000	0.00000	0.00000
	B	0.00979	0.01029	0.01073
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01306	0.01360	0.01481
	B	0.00000	0.00000	0.00000
	B	0.01309	0.01378	0.01452
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00137	0.00123	0.00240
	B	0.00000	0.00000	0.00000
	B	0.00140	0.00123	0.00192

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	0.00431	0.00420	0.00514
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00475	0.00559
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00538	0.00552	0.00641
	B	0.00000	0.00000	0.00000
	B	0.00597	0.00604	0.00686
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00807	0.00867	0.00959
	B	0.00000	0.00000	0.00000
	B	0.00865	0.00916	0.01000
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01086	0.01188	0.01290
	B	0.00000	0.00000	0.00000
	B	0.01142	0.01238	0.01325
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01348	0.01494	0.01609
	B	0.00000	0.00000	0.00000
	B	0.01414	0.01539	0.01638
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00333	0.00327	0.00491
	B	0.00000	0.00000	0.00000
	B	0.00376	0.00369	0.00523

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)	-0.00143	-0.00143	-0.00145
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00142	-0.00143	-0.00145
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00142	-0.00143	-0.00145
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00144	-0.00146	-0.00146
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00143	-0.00144	-0.00145
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00101	-0.00102	-0.00103

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)	0.00144	0.00148	0.00145
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00144	0.00146	0.00145
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00144	0.00146	0.00145
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00146	0.00148	0.00147
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00144	0.00146	0.00145
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00102	0.00105	0.00103

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)	-0.00136	-0.00137	-0.00136
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00136	-0.00137	-0.00136
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00136	-0.00136	-0.00136
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00136	-0.00136	-0.00136
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00136	-0.00137	-0.00136
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00096	-0.00097	-0.00096

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)	0.00139	0.00137	0.00136
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00137	0.00136
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00138	0.00136
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00137	0.00136
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00140	0.00137	0.00137
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00098	0.00097	0.00097

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00248	0.00267	0.00267	0.29062

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00451	0.00730

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)	0.15574	1.26246	12.12310
	A1->Y (FR)	0.12799	1.17137	11.61260
	B0->Y (FR)	0.12130	1.20626	12.09710

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)	0.05147	0.53075	5.64202
	A1->Y (RF)	0.04699	0.55049	6.05393
	B0->Y (RF)	0.03037	0.49333	5.65052

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	0.00348	0.00342	0.00343
	A1	0.00000	0.00000	0.00000
	A1	0.00292	0.00286	0.00284
	B0	0.00289	0.00281	0.00289

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	0.00077	0.00066	0.00064
	A1	0.00000	0.00000	0.00000
	A1	0.00078	0.00066	0.00066
	B0	-0.00023	-0.00028	-0.00028

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)	-0.00106	-0.00115	-0.00115
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00117	-0.00118	-0.00118
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00117	-0.00117	-0.00117

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)	0.00114	0.00116	0.00115
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00118	0.00119	0.00118
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00120	0.00119	0.00118

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)	-0.00106	-0.00116	-0.00115
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00117	-0.00118	-0.00118
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00130	-0.00131	-0.00131

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)	0.00115	0.00116	0.00115
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00117	0.00119	0.00118
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00131	0.00134	0.00132

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)	-0.00061	-0.00062	-0.00062

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)	0.00070	0.00070	0.00064

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00248	0.00266	0.00279	0.00261	0.28693

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00568	0.01386

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)	0.19874	1.30882	12.11570
	A1->Y (FR)	0.17798	1.28133	12.05660
	B0->Y (FR)	0.12739	1.20704	12.01250
	B1->Y (FR)	0.14838	1.23360	12.07810

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)	0.06563	0.54539	5.62883
	A1->Y (RF)	0.06107	0.56473	6.03985
	B0->Y (RF)	0.03901	0.53624	6.00002
	B1->Y (RF)	0.04380	0.51699	5.59217

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	0.00431	0.00426	0.00425
	A1	0.00377	0.00369	0.00367
	B0	0.00307	0.00296	0.00305
	B1	0.00362	0.00354	0.00363

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00150	0.00141	0.00135
	A1	0.00151	0.00140	0.00137
	B0	-0.00012	-0.00016	-0.00015
	B1	-0.00010	-0.00015	-0.00016

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)	-0.00108	-0.00115	-0.00115
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00117	-0.00118	-0.00117
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00117	-0.00118	-0.00117
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00117	-0.00118	-0.00117

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)	0.00114	0.00116	0.00115
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00118	0.00119	0.00118
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00121	0.00118	0.00118
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00121	0.00118	0.00118

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)	-0.00108	-0.00115	-0.00115
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00117	-0.00118	-0.00118
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00129	-0.00130	-0.00131
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00129	-0.00130	-0.00131

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)	0.00114	0.00116	0.00115
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00118	0.00120	0.00118
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00131	0.00134	0.00131
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00131	0.00134	0.00131

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)	-0.00061	-0.00062	-0.00061
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00061	-0.00062	-0.00061
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00136	-0.00137	-0.00138
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00136	-0.00137	-0.00138

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)	0.00073	0.00074	0.00064
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00061	0.00062	0.00061
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00137	0.00138	0.00138
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00137	0.00138	0.00138

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)	-0.00062	-0.00063	-0.00062
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00062	-0.00062	-0.00062
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00124	-0.00125	-0.00124
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00124	-0.00125	-0.00124

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)	0.00074	0.00074	0.00065
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00062	0.00062	0.00062
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00127	0.00125	0.00125
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00127	0.00125	0.00125

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00284	0.65345
sky130_osu_sc_12T_hs__buf_2	0.00284	1.33204
sky130_osu_sc_12T_hs__buf_4	0.00284	2.66673
sky130_osu_sc_12T_hs__buf_6	0.00082	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00284	5.19263
sky130_osu_sc_12T_hs__buf_l	0.00216	0.50668

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.00905	0.00905
sky130_osu_sc_12T_hs__buf_2	0.00000	0.01357	0.01598
sky130_osu_sc_12T_hs__buf_4	0.00000	0.02262	0.02984
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.04072	0.05756
sky130_osu_sc_12T_hs__buf_l	0.00000	0.08477	0.08477

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)**	0.08299	0.80454	7.50590
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.08479	0.69462	7.62779
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.11166	0.66801	8.08479
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.16579	0.69947	8.52981
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.08442	0.84120	7.30351

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)**	0.10058	0.64568	5.31314
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.12178	0.64892	5.75166
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.17828	0.69937	6.36576
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.29152	0.81923	7.07580
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.10148	0.64397	4.87982

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	0.00168	0.00139	0.00201
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00311	0.00296	0.00363
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00640	0.00654	0.00716
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01290	0.01356	0.01434
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00134	0.00113	0.00218

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	0.00423	0.00405	0.00496
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00528	0.00531	0.00615
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00799	0.00840	0.00926
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01354	0.01465	0.01561
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00331	0.00325	0.00487

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
	-0.00036	-0.00036	-0.00036

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
	0.00036	0.00036	0.00036

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00260	0.00259	0.00828	0.68131	0.68230
sky130_osu_sc_12T_hs__dffr_l	0.00260	0.00259	0.00828	0.50326	0.50325

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.07366	0.14295
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.14938	0.21867

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)	0.50550	1.72701	13.80150
	QN->Q (FR)	0.04713	0.99216	13.09150
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.49058	1.77020	13.09970
	QN->Q (FR)	0.05049	1.00639	12.27750

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)	0.48238	1.81750	15.73770
	QN->Q (RF)	0.02562	0.58599	8.02438
	RN->Q (FF)	0.34592	1.83085	17.54480
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.48439	1.93837	15.48570
	QN->Q (RF)	0.02708	0.59904	7.75942
	RN->Q (FF)	0.34869	1.95193	17.27150

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)	0.43230	1.16324	8.01227
	RN->QN (FR)	0.29558	1.17575	9.81518
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.42784	1.20898	7.81646
	RN->QN (FR)	0.29166	1.22115	9.60197

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)**	0.42607	0.89247	4.03223
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.41012	0.88787	3.88482

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)	-0.07348	-0.09833	-0.45531
	setup	CK (R)	0.37996	0.39355	1.65729
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.07456	-0.09632	-0.45617
	setup	CK (R)	0.38092	0.39263	1.67799

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)	-0.21739	-0.50337	-5.15398
	setup	CK (R)	0.25088	0.52032	5.19895
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.21972	-0.49985	-5.15609
	setup	CK (R)	0.25094	0.52032	5.19825

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)	-0.07348	-0.09833	-0.45531
	setup	CK (R)	0.37996	0.39355	1.65729
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.07456	-0.09632	-0.45617
	setup	CK (R)	0.38092	0.39263	1.67799

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)	-0.21739	-0.50337	-5.15398
	setup	CK (R)	0.25088	0.52032	5.19895
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.21972	-0.49985	-5.15609
	setup	CK (R)	0.25094	0.52032	5.19825

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)	0.33991	0.35609	1.53534
	removal	CK (R)	-0.05944	-0.07226	-0.08286
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.34133	0.35522	1.54549
	removal	CK (R)	-0.06192	-0.07255	-0.08254

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)	0.33991	0.35609	1.53534
	removal	CK (R)	-0.05944	-0.07226	-0.08286
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.34133	0.35522	1.54549
	removal	CK (R)	-0.06192	-0.07255	-0.08254

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 ()	0.21911	0.49048	13.33370
	min_pulse_width	RN ()	0.22283	0.49048	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.21351	0.48603	13.33370
	min_pulse_width	RN ()	0.21719	0.48603	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 ()	0.21593	0.43701	13.33370
	min_pulse_width	CK ()	0.26213	0.43701	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.20273	0.43701	13.33370
	min_pulse_width	CK ()	0.25553	0.43701	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 ()	0.50678	0.57961	13.33370
	min_pulse_width	CK ()	0.20603	0.43701	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.50678	0.57961	13.33370
	min_pulse_width	CK ()	0.20603	0.43701	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	0.00437	0.00373	-0.00029
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00397	0.00340	0.00135

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	0.00487	0.00443	0.00180
	RN	-0.00057	-0.02500	-0.31042
	RN	0.01094	0.01058	0.00792
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00445	0.00409	0.00276
	RN	-0.00057	-0.02085	-0.22930
	RN	0.01052	0.01024	0.00891

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	0.00487	0.00444	0.00183
	RN	-0.00057	-0.02502	-0.31087
	RN	0.01094	0.01058	0.00786
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00446	0.00410	0.00282
	RN	-0.00057	-0.02085	-0.22929
	RN	0.01053	0.01024	0.00886

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	0.00435	0.00370	-0.00040
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00395	0.00337	0.00127

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	-0.00100	-0.00116	-0.00117
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00529	0.00504	0.00519
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00213	0.00193	0.00215
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00100	-0.00116	-0.00117
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00529	0.00504	0.00519
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00214	0.00193	0.00215

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	0.00116	0.00117	0.00117
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00780	0.00765	0.00780
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00381	0.00369	0.00387
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00116	0.00117	0.00117
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00780	0.00766	0.00780
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00381	0.00369	0.00388

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)	0.00172	0.00144	0.00207
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00504	0.00462	0.00521
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)	0.00172	0.00144	0.00206
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00505	0.00463	0.00522

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)	0.00429	0.00409	0.00495
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00836	0.00807	0.00872
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)	0.00429	0.00409	0.00495
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00836	0.00807	0.00873

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)	-0.00021	-0.00058	-0.00005
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00266	0.00206	0.00246
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00024	-0.00066	-0.00008
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00020	-0.00058	-0.00005
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00267	0.00205	0.00246
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00024	-0.00066	-0.00008

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)	0.00668	0.00639	0.00721
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01321	0.01271	0.01318
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00987	0.00956	0.01017
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01300	0.01245	0.01416
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00700	0.00670	0.00750
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00668	0.00638	0.00721
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01322	0.01271	0.01319
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00987	0.00956	0.01017
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01301	0.01244	0.01416
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00700	0.00670	0.00750

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00256	0.00261	0.00610	0.00839	0.69686	0.70374
sky130_osu_sc_12T_hs__dffsr_l	0.00256	0.00261	0.00610	0.00839	0.49801	0.50356

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.03482	0.04369
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.11054	0.11941

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)	0.54251	1.77658	14.06030
	QN->Q (FR)	0.04472	0.96391	12.84450
	RN->Q (RR)	0.43784	1.68165	14.11950
	SN->Q (FR)	0.42496	1.78746	16.46130
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.53521	1.82274	13.13510
	QN->Q (FR)	0.05039	1.00173	12.19840
	RN->Q (RR)	0.43090	1.72900	13.19810
	SN->Q (FR)	0.41726	1.83579	15.50900

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)	0.55529	1.89221	15.87630
	QN->Q (RF)	0.02544	0.58915	8.10036
	RN->Q (FF)	0.36782	1.84783	17.70340
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.55831	2.01167	15.42300
	QN->Q (RF)	0.02694	0.59665	7.71833
	RN->Q (FF)	0.37261	1.97057	17.24120

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)	0.50423	1.23843	8.11914
	RN->QN (FR)	0.31800	1.19562	9.94991
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.50040	1.28957	7.91474
	RN->QN (FR)	0.31578	1.24859	9.72867

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)	0.46720	0.95059	4.28673
	RN->QN (RF)	0.36275	0.85820	4.35049
	SN->QN (FF)	0.35163	0.96821	6.68945
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.45696	0.94856	4.05226
	RN->QN (RF)	0.35249	0.85701	4.11305
	SN->QN (FF)	0.33934	0.96354	6.42412

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)	-0.08920	-0.11393	-0.56584
	setup	CK (R)	0.40385	0.40299	1.66148
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.08955	-0.11402	-0.56319
	setup	CK (R)	0.40501	0.40615	1.66599

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)	-0.25334	-0.52891	-5.35591
	setup	CK (R)	0.29646	0.54347	5.40352
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.25064	-0.52902	-5.35952
	setup	CK (R)	0.29718	0.54289	5.40151

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)	-0.08920	-0.11393	-0.56584
	setup	CK (R)	0.40385	0.40299	1.66148
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.08955	-0.11402	-0.56319
	setup	CK (R)	0.40501	0.40615	1.66599

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)	-0.25334	-0.52891	-5.35591
	setup	CK (R)	0.29646	0.54347	5.40352
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.25064	-0.52902	-5.35952
	setup	CK (R)	0.29718	0.54289	5.40151

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)	0.32729	0.33571	1.46233
	removal	CK (R)	-0.04979	-0.05920	-0.12180
	hold	SN (R)	-0.33649	-0.52706	-3.59651
	setup	SN (R)	0.36605	0.56460	6.04645
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.32767	0.33660	1.47681
	removal	CK (R)	-0.04979	-0.05920	-0.12180
	hold	SN (R)	-0.32215	-0.51226	-3.52803
	setup	SN (R)	0.36424	0.55280	5.91961

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)	0.32729	0.33571	1.46233
	removal	CK (R)	-0.04979	-0.05920	-0.12180
	hold	SN (R)	-0.33649	-0.52706	-3.59651
	hold	SN (R)	-0.33844	-0.52883	-3.61440
	setup	SN (R)	0.36371	0.56310	5.91433
	setup	SN (R)	0.36605	0.56460	6.04645
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.32767	0.33660	1.47681
	removal	CK (R)	-0.04979	-0.05920	-0.12180
	hold	SN (R)	-0.32563	-0.51226	-3.52803
	hold	SN (R)	-0.32215	-0.51392	-3.53897
	setup	SN (R)	0.36424	0.54997	5.76662
	setup	SN (R)	0.34752	0.55280	5.91961

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 ()	0.24605	0.50831	13.33370
	min_pulse_width	RN ()	0.25872	0.51054	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.24885	0.50608	13.33370
	min_pulse_width	RN ()	0.25653	0.50608	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)	0.04953	0.07549	2.61627
	removal	CK (R)	-0.01591	-0.04903	-0.50353
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04953	0.07549	2.44588
	removal	CK (R)	-0.01591	-0.04903	-0.50061

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)	0.04953	0.07549	2.61627
	removal	CK (R)	-0.01591	-0.04903	-0.50353
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04953	0.07549	2.44588
	removal	CK (R)	-0.01591	-0.04903	-0.50061

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 ()	0.34221	0.59297	13.33370
	min_pulse_width	SN ()	0.35255	0.59520	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.33998	0.57738	13.33370
	min_pulse_width	SN ()	0.33369	0.58183	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 ()	0.24233	0.43701	13.33370
	min_pulse_width	CK ()	0.28852	0.43701	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.23243	0.43701	13.33370
	min_pulse_width	CK ()	0.28523	0.43701	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 ()	0.52999	0.59074	13.33370
	min_pulse_width	CK ()	0.25322	0.47043	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.52972	0.59297	13.33370
	min_pulse_width	CK ()	0.25322	0.47043	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	0.00532	0.00471	0.00048
	RN	0.00972	0.00923	0.00460
	SN	-0.00057	-0.02534	-0.31751
	SN	0.01067	0.01020	0.00524
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00495	0.00442	0.00233
	RN	0.00934	0.00895	0.00646
	SN	-0.00057	-0.02072	-0.22691
	SN	0.01029	0.00992	0.00720

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	0.00562	0.00530	0.00347
	RN	-0.00057	-0.02534	-0.31751
	RN	0.01150	0.01121	0.00936
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00522	0.00490	0.00363
	RN	-0.00057	-0.02072	-0.22691
	RN	0.01109	0.01080	0.00951

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	0.00563	0.00530	0.00346
	RN	-0.00057	-0.02549	-0.32064
	RN	0.01151	0.01121	0.00928
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00523	0.00490	0.00365
	RN	-0.00057	-0.02085	-0.22943
	RN	0.01110	0.01081	0.00946

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	0.00529	0.00468	0.00040
	RN	0.00969	0.00920	0.00449
	SN	-0.00057	-0.02549	-0.32062
	SN	0.01064	0.01017	0.00522
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00492	0.00439	0.00224
	RN	0.00931	0.00891	0.00629
	SN	-0.00057	-0.02085	-0.22942
	SN	0.01026	0.00989	0.00707

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	-0.00114	-0.00117	-0.00117
	(!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)	0.00655	0.00633	0.00649
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00231	0.00211	0.00230
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00229	0.00210	0.00229
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00232	0.00212	0.00232
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00114	-0.00117	-0.00117
	(!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)	0.00655	0.00633	0.00650
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00231	0.00211	0.00230
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00229	0.00210	0.00229
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00232	0.00212	0.00232

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	0.00119	0.00118	0.00117
	(!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)	0.00899	0.00884	0.00890
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00416	0.00406	0.00427
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00419	0.00407	0.00428
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00414	0.00404	0.00424
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00120	0.00118	0.00117
	(!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)	0.00899	0.00884	0.00891
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00416	0.00406	0.00427
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00419	0.00407	0.00428
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00414	0.00404	0.00424

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)	0.00151	0.00123	0.00178
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00597	0.00555	0.00599
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)	0.00151	0.00123	0.00178
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00597	0.00556	0.00599

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)	0.00469	0.00451	0.00540
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00887	0.00856	0.00921
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)	0.00469	0.00451	0.00540
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00887	0.00856	0.00921

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)	-0.00303	-0.00305	-0.00307
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00314	-0.00333	-0.00332
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00298	-0.00308	-0.00308
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00147	0.00121	0.00147
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)	-0.00303	-0.00305	-0.00307
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00314	-0.00333	-0.00332
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00298	-0.00308	-0.00308
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00147	0.00121	0.00147

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)	0.00308	0.00314	0.00308
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00330	0.00335	0.00332
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00308	0.00309	0.00308
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00705	0.00687	0.00699
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)	0.00308	0.00314	0.00308
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00330	0.00335	0.00332
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00308	0.00309	0.00308
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00705	0.00687	0.00700

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)	-0.00025	-0.00062	-0.00009
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00313	0.00255	0.00297
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00309	0.00251	0.00293
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00016	-0.00058	-0.00001
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00171	0.00106	0.00227
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00024	-0.00062	-0.00009
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00313	0.00255	0.00297
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00309	0.00251	0.00293
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00016	-0.00058	-0.00001
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00172	0.00106	0.00227

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)	0.01466	0.01417	0.01466
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00681	0.00649	0.00732
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01000	0.00971	0.01032
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01002	0.00972	0.01033
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01425	0.01368	0.01527
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00700	0.00670	0.00749
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00897	0.00845	0.01021
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01466	0.01417	0.01466
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00681	0.00649	0.00733
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01000	0.00971	0.01032
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01002	0.00972	0.01033
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01425	0.01368	0.01527
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00700	0.00670	0.00749
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00897	0.00846	0.01021

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00258	0.00514	0.00831	0.68567	0.68431
sky130_osu_sc_12T_hs__dffs_l	0.00258	0.00514	0.00831	0.50288	0.50401

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.13509	0.35730
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.21081	0.43302

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)	0.34442	1.54383	13.70050
	QN->Q (FR)	0.04716	0.99214	13.10290
	SN->Q (FR)	0.27998	1.62094	15.36940
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.34048	1.59673	12.92660
	QN->Q (FR)	0.05047	1.00388	12.25070
	SN->Q (FR)	0.27423	1.67116	14.54830

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)	0.53191	1.87458	15.85580
	QN->Q (RF)	0.02551	0.58523	8.02927
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.52907	1.98516	15.50140
	QN->Q (RF)	0.02699	0.59752	7.74337

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)	0.47989	1.21682	8.07096
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.47069	1.25636	7.86357

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)	0.27570	0.71351	3.87650
	SN->QN (FF)	0.20976	0.79177	5.54345
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.26923	0.72127	3.73553
	SN->QN (FF)	0.20197	0.79640	5.36129

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)	-0.05476	-0.07936	-0.40199
	setup	CK (R)	0.24344	0.25902	1.60739
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.05476	-0.07936	-0.40185
	setup	CK (R)	0.24331	0.25962	1.61864

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)	-0.22557	-0.50614	-5.19913
	setup	CK (R)	0.27941	0.52665	5.25904
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.22620	-0.50639	-5.20363
	setup	CK (R)	0.28122	0.52665	5.25918

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)	-0.05476	-0.07936	-0.40199
	setup	CK (R)	0.24344	0.25902	1.60739
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.05476	-0.07936	-0.40185
	setup	CK (R)	0.24331	0.25962	1.61864

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)	-0.22557	-0.50614	-5.19913
	setup	CK (R)	0.27941	0.52665	5.25904
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.22620	-0.50639	-5.20363
	setup	CK (R)	0.28122	0.52665	5.25918

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)	0.05793	0.08612	1.82052
	removal	CK (R)	-0.02211	-0.05174	-0.51872
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.05843	0.08612	1.64906
	removal	CK (R)	-0.02211	-0.05174	-0.51872

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)	0.05793	0.08612	1.82052
	removal	CK (R)	-0.02211	-0.05174	-0.51872
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.05843	0.08612	1.64906
	removal	CK (R)	-0.02211	-0.05174	-0.51872

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 ()	0.19526	0.51722	13.33370
	min_pulse_width	SN ()	0.19919	0.51722	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.19046	0.50385	13.33370
	min_pulse_width	SN ()	0.19126	0.50608	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 ()	0.13014	0.43701	13.33370
	min_pulse_width	CK ()	0.27533	0.43701	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.12354	0.43701	13.33370
	min_pulse_width	CK ()	0.26873	0.43701	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 ()	0.36651	0.48380	13.33370
	min_pulse_width	CK ()	0.23817	0.44815	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.36651	0.48380	13.33370
	min_pulse_width	CK ()	0.23817	0.44815	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	0.00438	0.00371	-0.00024
	SN	-0.00057	-0.02510	-0.31241
	SN	0.00924	0.00867	0.00534
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00398	0.00339	0.00142
	SN	-0.00057	-0.02084	-0.22912
	SN	0.00882	0.00835	0.00705

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	0.00484	0.00444	0.00190
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00443	0.00409	0.00282

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	0.00484	0.00444	0.00190
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00443	0.00410	0.00286

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	0.00436	0.00369	-0.00037
	SN	-0.00057	-0.02507	-0.31177
	SN	0.00921	0.00864	0.00523
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00395	0.00337	0.00129
	SN	-0.00057	-0.02087	-0.22963
	SN	0.00879	0.00832	0.00688

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	-0.00116	-0.00119	-0.00119
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00523	0.00498	0.00511
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00212	0.00191	0.00212
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00116	-0.00119	-0.00119
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00523	0.00498	0.00512
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00212	0.00191	0.00212

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	0.00122	0.00120	0.00119
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00774	0.00758	0.00769
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00384	0.00372	0.00394
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00122	0.00120	0.00119
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00775	0.00758	0.00770
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00384	0.00372	0.00394

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)	-0.00226	-0.00227	-0.00228
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00150	0.00124	0.00198
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)	-0.00226	-0.00227	-0.00228
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00150	0.00124	0.00198

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)	0.00230	0.00233	0.00229
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00502	0.00476	0.00618
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)	0.00230	0.00232	0.00228
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00502	0.00476	0.00617

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)	-0.00021	-0.00058	-0.00005
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00020	-0.00062	-0.00002
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00157	0.00090	0.00217
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00021	-0.00058	-0.00005
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00020	-0.00062	-0.00002
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00157	0.00090	0.00217

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)	0.01321	0.01271	0.01320
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00668	0.00638	0.00721
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01288	0.01225	0.01395
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00696	0.00666	0.00745
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00851	0.00802	0.00980
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01321	0.01271	0.01320
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00668	0.00638	0.00721
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01288	0.01226	0.01395
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00696	0.00666	0.00745
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00851	0.00802	0.00980

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00273	0.00822	0.63894
sky130_osu_sc_12T_hs__dff_l	0.00273	0.00822	0.48453

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.03112	0.03602
sky130_osu_sc_12T_hs__dff_l	0.00000	0.10684	0.11174

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)	0.29766	1.03265	7.73916
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.29320	1.07897	7.59803

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)	0.45385	0.87808	4.00964
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.45131	0.89808	3.96787

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)	-0.05796	-0.08441	-0.45749
	setup	CK (R)	0.19743	0.21764	1.59843
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.05742	-0.08440	-0.45935
	setup	CK (R)	0.19837	0.21813	1.61521

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)	-0.21232	-0.50440	-5.23640
	setup	CK (R)	0.25059	0.52665	5.29220
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.21307	-0.50512	-5.23257
	setup	CK (R)	0.25059	0.52665	5.29220

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 ()	0.12024	0.43701	13.33370
	min_pulse_width	CK ()	0.25223	0.43701	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.11694	0.43701	13.33370
	min_pulse_width	CK ()	0.24893	0.43701	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 ()	0.32141	0.46598	13.33370
	min_pulse_width	CK ()	0.19996	0.44592	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.32141	0.46598	13.33370
	min_pulse_width	CK ()	0.19996	0.44592	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	0.00920	0.00837	0.00950
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00836	0.00754	0.00867

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	0.00985	0.00934	0.00975
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00902	0.00851	0.00892

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	-0.00100	-0.00115	-0.00116
	!CK	0.00000	0.00000	0.00000
	!CK	0.00471	0.00446	0.00458
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00100	-0.00115	-0.00116
	!CK	0.00000	0.00000	0.00000
	!CK	0.00471	0.00446	0.00458

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	0.00115	0.00116	0.00116
	!CK	0.00000	0.00000	0.00000
	!CK	0.00802	0.00781	0.00797
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00115	0.00115	0.00116
	!CK	0.00000	0.00000	0.00000
	!CK	0.00802	0.00781	0.00797

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)	-0.00023	-0.00060	-0.00007
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00020	-0.00061	-0.00004
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00023	-0.00060	-0.00007
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00020	-0.00062	-0.00004

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)	0.00666	0.00637	0.00719
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01268	0.01218	0.01270
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01304	0.01240	0.01414
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00691	0.00661	0.00744
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00666	0.00637	0.00720
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01268	0.01218	0.01270
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01305	0.01240	0.01414
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00691	0.00661	0.00744

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00264	0.62827
sky130_osu_sc_12T_hs__inv_10	0.02338	6.39482
sky130_osu_sc_12T_hs__inv_2	0.00487	1.32057
sky130_osu_sc_12T_hs__inv_3	0.00720	1.92682
sky130_osu_sc_12T_hs__inv_4	0.00947	2.62586
sky130_osu_sc_12T_hs__inv_6	0.01418	3.92219
sky130_osu_sc_12T_hs__inv_8	0.01878	5.19025
sky130_osu_sc_12T_hs__inv_l	0.00212	0.46328

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00453	0.00693
sky130_osu_sc_12T_hs__inv_10	0.00000	0.04524	0.06931
sky130_osu_sc_12T_hs__inv_2	0.00000	0.00905	0.01386
sky130_osu_sc_12T_hs__inv_3	0.00000	0.01357	0.02079
sky130_osu_sc_12T_hs__inv_4	0.00000	0.01810	0.02772
sky130_osu_sc_12T_hs__inv_6	0.00000	0.02715	0.04158
sky130_osu_sc_12T_hs__inv_8	0.00000	0.03620	0.05545
sky130_osu_sc_12T_hs__inv_l	0.00000	0.04239	0.08379

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)**	0.04610	0.93120	12.10600
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.04514	0.60491	12.19120
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.03253	0.78888	12.21050
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.03408	0.73062	12.16610
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.03250	0.69115	12.22250
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.03511	0.64415	12.23250
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.03962	0.62086	12.21350
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.05084	0.95410	11.45310

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)**	0.02364	0.53147	7.13148
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02879	0.36944	7.38248
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01862	0.47423	7.31332
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01982	0.44628	7.35366
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01931	0.42326	7.40047
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02225	0.39949	7.42719
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02537	0.38284	7.42305
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02577	0.55219	7.00808

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	0.00211	0.00209	0.00219
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.01707	0.01734	0.01890
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00361	0.00361	0.00387
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00556	0.00554	0.00596
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00705	0.00705	0.00765
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01043	0.00995	0.01143
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01378	0.01394	0.01518
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00170	0.00167	0.00186

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	-0.00029	-0.00032	-0.00030
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00567	-0.00560	-0.00461
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00104	-0.00107	-0.00098
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00132	-0.00139	-0.00120
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00213	-0.00216	-0.00189
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00323	-0.00328	-0.00280
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00442	-0.00445	-0.00371
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00021	-0.00024	-0.00022

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.03527	0.03516	0.00545	0.03125

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.00912	0.00912

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)	-	0.01800	0.28182	1.97398
	A1->Y (RR)	-	0.02307	0.28602	1.98791
	S0->Y (RR)	(!A0 * A1)	0.05977	0.29727	0.80939
	S0->Y (FR)	(A0 * !A1)	0.04793	0.44149	3.14671

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)	-	0.02027	0.22664	1.74274
	A1->Y (FF)	-	0.01735	0.22263	1.73619
	S0->Y (FF)	(!A0 * A1)	0.10012	0.43697	2.49536
	S0->Y (RF)	(A0 * !A1)	0.02571	0.24693	1.38511

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	-	-0.00215	-0.00215	-0.00216
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00140	-0.00140	-0.00141
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00283	0.00263	0.00365
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00127	-0.00161	-0.00086

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	-	0.00215	0.00215	0.00216
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00140	0.00140	0.00141
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00045	0.00012	0.00091
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00569	0.00547	0.00642

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)	-0.00054	-0.00054	-0.00054

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)	0.00054	0.00054	0.00054

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)	-0.00064	-0.00064	-0.00064

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)	0.00064	0.00064	0.00064

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)	-0.00042	-0.00075	0.00003
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00041	-0.00075	0.00002

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)	0.00437	0.00416	0.00513
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00414	0.00394	0.00496

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00262	0.00263	0.62479
sky130_osu_sc_12T_hs__nand2_l	0.00208	0.00211	0.46173

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00456	0.01386
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.04241	0.16757

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)	0.04817	0.93391	12.10110
	B->Y (FR)	0.05478	0.90860	11.71960
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.05148	0.95502	11.45020
	B->Y (FR)	0.06129	0.96357	11.44240

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)	0.03685	0.67925	8.83967
	B->Y (RF)	0.04177	0.66185	8.41333
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.03974	0.71121	8.66697
	B->Y (RF)	0.04449	0.69645	8.24585

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	0.00222	0.00219	0.00229
	B	0.00000	0.00000	0.00000
	B	0.00280	0.00276	0.00286
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00171	0.00169	0.00185
	B	0.00000	0.00000	0.00000
	B	0.00215	0.00212	0.00229

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	-0.00016	-0.00020	-0.00018
	B	0.00000	0.00000	0.00000
	B	-0.00014	-0.00019	-0.00018
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00010	-0.00013	-0.00011
	B	0.00000	0.00000	0.00000
	B	-0.00009	-0.00013	-0.00012

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)	-0.00137	-0.00137	-0.00139
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00097	-0.00099	-0.00099

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)	0.00138	0.00140	0.00139
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00099	0.00101	0.00099

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)	-0.00127	-0.00128	-0.00127
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00091	-0.00092	-0.00091

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)	0.00130	0.00129	0.00127
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00093	0.00093	0.00092

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00258	0.00286	0.31593
sky130_osu_sc_12T_hs__nor2_l	0.00199	0.00221	0.23299

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00384	0.00693
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.02917	0.08379

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)	0.11303	1.19110	12.16500
	B->Y (FR)	0.09352	1.15028	12.03550
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.11684	1.23421	11.63030
	B->Y (FR)	0.10194	1.17843	11.23220

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)	0.02897	0.44979	5.18278
	B->Y (RF)	0.02487	0.44269	5.16717
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02997	0.46750	5.09188
	B->Y (RF)	0.02668	0.45984	5.07875

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	0.00283	0.00277	0.00278
	B	0.00000	0.00000	0.00000
	B	0.00231	0.00224	0.00233
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00209	0.00205	0.00207
	B	0.00000	0.00000	0.00000
	B	0.00177	0.00173	0.00191

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	0.00034	0.00024	0.00026
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00025	-0.00024
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00026	0.00019	0.00022
	B	0.00000	0.00000	0.00000
	B	-0.00014	-0.00016	-0.00014

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)	-0.00101	-0.00117	-0.00117
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00065	-0.00079	-0.00080

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)	0.00116	0.00117	0.00117
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00080	0.00081	0.00081

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)	-0.00062	-0.00062	-0.00062
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00044	-0.00044	-0.00043

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)	0.00066	0.00067	0.00063
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00046	0.00046	0.00044

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00263	0.00272	0.00233	0.31783

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.03413	0.09072

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)	0.13114	1.19415	12.13930
	A1->Y (FR)	0.15607	1.24126	12.26910
	B0->Y (FR)	0.06452	0.84119	9.42989

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)	0.05009	0.54887	5.95225
	A1->Y (RF)	0.05734	0.54940	5.90394
	B0->Y (RF)	0.03982	0.57037	6.52225

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	0.00317	0.00309	0.00319
	A1	0.00000	0.00000	0.00000
	A1	0.00374	0.00367	0.00366
	B0	0.00252	0.00247	0.00272

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	0.00021	0.00018	0.00017
	A1	0.00000	0.00000	0.00000
	A1	0.00080	0.00070	0.00069
	B0	0.00102	0.00097	0.00098

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)	-0.00062	-0.00063	-0.00062
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00117	-0.00119	-0.00119
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00122	-0.00122	-0.00122

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)	0.00067	0.00067	0.00064
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00119	0.00119	0.00119
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00123	0.00122	0.00122

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)	-0.00096	-0.00112	-0.00113
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00115	-0.00118	-0.00118
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00119	-0.00121	-0.00120

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)	0.00112	0.00113	0.00113
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00117	0.00118	0.00118
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00121	0.00121	0.00120

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)	-0.00102	-0.00103	-0.00106

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)	0.00106	0.00106	0.00106

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00246	0.00259	0.00276	0.00272	0.32766

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00569	0.01386

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)	0.16620	1.24116	12.26640
	A1->Y (FR)	0.14554	1.19834	12.14970
	B0->Y (FR)	0.09865	1.15007	12.10500
	B1->Y (FR)	0.12149	1.19406	12.22410

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)	0.07410	0.58632	6.09525
	A1->Y (RF)	0.06220	0.57012	6.06425
	B0->Y (RF)	0.05219	0.59084	6.63912
	B1->Y (RF)	0.06495	0.60577	6.69123

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	0.00469	0.00462	0.00462
	A1	0.00412	0.00404	0.00413
	B0	0.00299	0.00293	0.00301
	B1	0.00359	0.00352	0.00351

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00116	0.00106	0.00104
	A1	0.00061	0.00058	0.00055
	B0	0.00060	0.00057	0.00056
	B1	0.00117	0.00105	0.00105

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)	-0.00098	-0.00114	-0.00114
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00098	-0.00114	-0.00114
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00111	-0.00114	-0.00114
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00116	-0.00116	-0.00116

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)	0.00114	0.00115	0.00114
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00114	0.00115	0.00114
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00114	0.00114	0.00114
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00116	0.00118	0.00116

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)	-0.00060	-0.00061	-0.00060
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00060	-0.00061	-0.00060
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00111	-0.00113	-0.00113
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00116	-0.00116	-0.00116

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)	0.00064	0.00065	0.00062
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00065	0.00065	0.00062
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00113	0.00113	0.00113
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00116	0.00117	0.00116

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)	-0.00061	-0.00062	-0.00061
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00061	-0.00062	-0.00061
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00132	-0.00135	-0.00134
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00132	-0.00133	-0.00137

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)	0.00065	0.00066	0.00062
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00065	0.00066	0.00062
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00135	0.00135	0.00134
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00137	0.00138	0.00138

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)	-0.00097	-0.00113	-0.00113
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00097	-0.00113	-0.00113
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00135	-0.00138	-0.00138
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00134	-0.00136	-0.00140

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)	0.00113	0.00114	0.00113
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00113	0.00114	0.00113
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00138	0.00139	0.00138
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00140	0.00142	0.00141

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00294	0.00270	0.64832
sky130_osu_sc_12T_hs__or2_2	0.00294	0.00270	1.34942
sky130_osu_sc_12T_hs__or2_4	0.00294	0.00270	2.63124
sky130_osu_sc_12T_hs__or2_8	0.00292	0.00271	5.21963
sky130_osu_sc_12T_hs__or2_l	0.00225	0.00210	0.47739

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00716	0.01117
sky130_osu_sc_12T_hs__or2_2	0.00000	0.01048	0.01810
sky130_osu_sc_12T_hs__or2_4	0.00000	0.01713	0.03196
sky130_osu_sc_12T_hs__or2_8	0.00000	0.03041	0.05968
sky130_osu_sc_12T_hs__or2_l	0.00000	0.05086	0.08576

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)	0.09207	0.83210	7.61556
	B->Y (RR)	0.08441	0.80896	7.46584
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.09478	0.72469	7.86584
	B->Y (RR)	0.08654	0.70379	7.73868
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.12183	0.68646	8.11802
	B->Y (RR)	0.11340	0.67073	8.01618
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.17605	0.71760	8.68979
	B->Y (RR)	0.16731	0.70477	8.61940
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.09438	0.87734	7.34164
	B->Y (RR)	0.08762	0.85419	7.23736

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)	0.20785	0.77960	5.89066
	B->Y (FF)	0.17651	0.73282	5.49284
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.25651	0.80920	6.39995
	B->Y (FF)	0.22551	0.76460	6.02861
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.37084	0.92182	6.99042
	B->Y (FF)	0.33989	0.87517	6.68215
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.59879	1.17491	7.81432
	B->Y (FF)	0.56767	1.12434	7.60510
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.21127	0.78571	5.38238
	B->Y (FF)	0.18395	0.72993	4.92263

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	0.00233	0.00205	0.00249
	B	0.00000	0.00000	0.00000
	B	0.00175	0.00155	0.00220
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00378	0.00364	0.00411
	B	0.00000	0.00000	0.00000
	B	0.00318	0.00317	0.00387
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00708	0.00724	0.00772
	B	0.00000	0.00000	0.00000
	B	0.00647	0.00680	0.00747
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01364	0.01429	0.01502
	B	0.00000	0.00000	0.00000
	B	0.01302	0.01391	0.01478
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00181	0.00162	0.00212
	B	0.00000	0.00000	0.00000
	B	0.00140	0.00127	0.00220

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	0.00494	0.00479	0.00498
	B	0.00000	0.00000	0.00000
	B	0.00421	0.00416	0.00503
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00602	0.00610	0.00627
	B	0.00000	0.00000	0.00000
	B	0.00527	0.00543	0.00625
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00874	0.00921	0.00941
	B	0.00000	0.00000	0.00000
	B	0.00795	0.00851	0.00933
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01425	0.01521	0.01582
	B	0.00000	0.00000	0.00000
	B	0.01350	0.01447	0.01565
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00376	0.00363	0.00405
	B	0.00000	0.00000	0.00000
	B	0.00325	0.00326	0.00476

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)	-0.00102	-0.00118	-0.00118
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00102	-0.00118	-0.00118
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00102	-0.00118	-0.00118
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00102	-0.00118	-0.00118
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00066	-0.00079	-0.00081

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)	0.00117	0.00119	0.00118
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00117	0.00119	0.00118
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00117	0.00119	0.00118
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00117	0.00119	0.00118
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00081	0.00081	0.00081

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)	-0.00062	-0.00062	-0.00062
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00062	-0.00062	-0.00062
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00062	-0.00063	-0.00062
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00062	-0.00062	-0.00062
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00042	-0.00043	-0.00042

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)	0.00067	0.00067	0.00064
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00067	0.00067	0.00064
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00067	0.00067	0.00064
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00067	0.00067	0.00064
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00045	0.00046	0.00043

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00283	0.00373	0.33065
sky130_osu_sc_12T_hs__tbufi_l	0.00222	0.00293	0.23304

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00549	0.01386
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.04297	0.16757

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)	0.08652	1.14408	12.16020
	OE->Y (FR)	0.06766	0.35399	4.01303
	OE->Y (RR)	0.12588	1.02880	7.67515
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.09776	1.17568	11.23370
	OE->Y (FR)	0.06626	0.31744	4.01295
	OE->Y (RR)	0.13144	1.08774	7.31613

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)	0.03591	0.55438	6.42972
	OE->Y (FF)	0.06897	0.35756	4.01298
	OE->Y (RF)	0.03446	0.52938	5.99167
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.03912	0.57089	6.16421
	OE->Y (FF)	0.06729	0.31911	4.01295
	OE->Y (RF)	0.03744	0.54411	5.74848

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	0.00215	0.00209	0.00217
	OE	0.00000	0.00000	0.00000
	OE	0.00205	0.00174	0.00259
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00166	0.00162	0.00177
	OE	0.00000	0.00000	0.00000
	OE	0.00152	0.00130	0.00261

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	-0.00022	-0.00024	-0.00024
	OE	0.00000	0.00000	0.00000
	OE	0.00138	0.00107	0.00192
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00014	-0.00015	-0.00014
	OE	0.00000	0.00000	0.00000
	OE	0.00097	0.00075	0.00212

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)	-0.00104	-0.00105	-0.00104
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00096	-0.00098	-0.00096
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00075	-0.00076	-0.00075
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00070	-0.00070	-0.00069

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)	0.00104	0.00105	0.00104
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00099	0.00100	0.00097
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00075	0.00076	0.00075
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00072	0.00072	0.00070

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)	0.00079	0.00049	0.00134
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00070	0.00044	0.00124
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00057	0.00035	0.00174
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00049	0.00027	0.00164

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)	0.00260	0.00234	0.00332
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00265	0.00240	0.00337
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00202	0.00187	0.00360
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00204	0.00191	0.00364

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00283	0.00415	0.33147
sky130_osu_sc_12T_hs__tnbufi_l	0.00212	0.00319	0.23318

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.00709	0.00905
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.07057	0.08477

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)	0.08738	1.14510	12.17800
	OE->Y (RR)	0.02860	0.26117	4.01319
	OE->Y (FR)	0.09925	1.17832	12.29450
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.09597	1.17331	11.23430
	OE->Y (RR)	0.03053	0.26094	4.01296
	OE->Y (FR)	0.10502	1.22385	11.63260

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)	0.03500	0.55435	6.43678
	OE->Y (RF)	0.02841	0.26117	4.01319
	OE->Y (FF)	0.08243	0.61059	4.51275
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.03694	0.56951	6.16454
	OE->Y (RF)	0.03016	0.26095	4.01294
	OE->Y (FF)	0.08885	0.60160	3.90208

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	0.00224	0.00217	0.00226
	OE	0.00000	0.00000	0.00000
	OE	0.00521	0.00509	0.00624
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00171	0.00166	0.00181
	OE	0.00000	0.00000	0.00000
	OE	0.00404	0.00398	0.00586

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	-0.00033	-0.00035	-0.00034
	OE	0.00000	0.00000	0.00000
	OE	0.00463	0.00450	0.00557
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00025	-0.00026	-0.00025
	OE	0.00000	0.00000	0.00000
	OE	0.00358	0.00353	0.00532

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)	-0.00086	-0.00086	-0.00086
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00078	-0.00079	-0.00078
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00059	-0.00059	-0.00059
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00054	-0.00054	-0.00053

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)	0.00086	0.00086	0.00086
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00080	0.00081	0.00079
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00059	0.00059	0.00059
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00056	0.00056	0.00054

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)	-0.00124	-0.00165	-0.00080
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00123	-0.00164	-0.00080
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00082	-0.00114	0.00024
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00086	-0.00115	0.00024

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)	0.00395	0.00383	0.00492
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00389	0.00376	0.00488
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00310	0.00308	0.00488
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00306	0.00302	0.00484

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00568	0.00479	0.33411

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.01639	0.02291

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	0.16343	1.07643	7.83782
	A->Y (FR)	!B	0.11445	1.17038	12.17770
	B->Y (RR)	A	0.13469	1.04646	7.77768
	B->Y (FR)	!A	0.13466	1.20761	12.28610

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	0.13132	0.69678	4.92671
	A->Y (RF)	!B	0.04940	0.54288	6.03568
	B->Y (FF)	A	0.12061	0.68507	4.91503
	B->Y (RF)	!A	0.05638	0.55367	6.04802

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	0.00216	0.00180	0.00255
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00542	0.00512	0.00623
	B	A	0.00000	0.00000	0.00000
	B	A	0.00111	0.00089	0.00168
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00559	0.00538	0.00644

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	0.00646	0.00613	0.00702
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00157	0.00123	0.00200
	B	A	0.00000	0.00000	0.00000
	B	A	0.00580	0.00569	0.00668
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00207	0.00171	0.00248

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.00569	0.00483	0.31870

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.01639	0.02152

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	0.17121	1.08353	7.78292
	A->Y (FR)	B	0.13879	1.21595	12.25210
	B->Y (RR)	!A	0.14167	1.06452	7.75974
	B->Y (FR)	A	0.14899	1.22941	12.26190

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	0.13271	0.69079	4.82046
	A->Y (RF)	B	0.04767	0.56755	6.33869
	B->Y (FF)	!A	0.12543	0.68361	4.81509
	B->Y (RF)	A	0.05344	0.54617	5.90798

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	0.00625	0.00599	0.00702
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00142	0.00088	0.00160
	B	A	0.00000	0.00000	0.00000
	B	A	0.00627	0.00608	0.00711
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00106	0.00082	0.00159

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	0.00136	0.00092	0.00168
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00674	0.00656	0.00750
	B	A	0.00000	0.00000	0.00000
	B	A	0.00137	0.00099	0.00174
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00587	0.00579	0.00677

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P35_25C.ccs
Cell Library: Process , Voltage 1.35,
Temp 25.00

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	0.14961
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	51669.00000	103338.00000
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
	-0.00112	0.00850	0.13878

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
	0.90002	0.85496	0.17970