sky130_osu_sc_12T_hs_tt_1P50_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_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.01064	0.01068	0.00822	0.93484	0.40225	0.83541
sky130_osu_sc_12T_hs__addf_l	0.01064	0.01068	0.00822	0.64759	0.40438	0.83543

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.03360	0.04022
sky130_osu_sc_12T_hs__addf_l	0.00000	0.10302	0.18050

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)	0.16251	1.68592	22.25320
	B->CO (RR)	0.15624	1.65361	21.97320
	CI->CO (RR)	0.15331	1.71511	22.90240
	CON->CO (FR)	0.03222	0.81761	11.92970
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.16016	1.54913	18.02550
	B->CO (RR)	0.15424	1.53154	18.05890
	CI->CO (RR)	0.15093	1.57933	18.70180
	CON->CO (FR)	0.03733	0.85469	11.33170

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)	0.29034	2.49207	32.15690
	B->CO (FF)	0.25957	2.38815	31.04670
	CI->CO (FF)	0.25601	2.45116	32.19370
	CON->CO (RF)	0.02070	0.51852	7.62701
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.28337	2.20574	24.97170
	B->CO (FF)	0.25345	2.11563	24.19060
	CI->CO (FF)	0.24901	2.16383	25.02620
	CON->CO (RF)	0.02234	0.53045	7.23141

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)	0.23027	1.17996	11.57220
	B->CON (FR)	0.20093	1.11492	11.24110
	CI->CON (FR)	0.19600	1.13922	11.65600
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.21941	1.17139	11.59780
	B->CON (FR)	0.19084	1.10686	11.26650
	CI->CON (FR)	0.18512	1.13063	11.68270

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)	0.08967	0.53981	5.61861
	B->CON (RF)	0.08564	0.55799	6.04244
	CI->CON (RF)	0.08051	0.57079	6.29279
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.08706	0.53804	5.63284
	B->CON (RF)	0.08316	0.55635	6.05680
	CI->CON (RF)	0.07789	0.56903	6.30778

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)	0.41385	2.39413	25.90830
	B->S (-R)	0.40877	2.36659	25.34080
	CI->S (-R)	0.37661	2.34674	25.93780
	CON->S (RR)	0.09563	0.75444	7.33159
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.39886	2.38282	25.89880
	B->S (-R)	0.39408	2.35566	25.33160
	CI->S (-R)	0.36173	2.33523	25.92770
	CON->S (RR)	0.09564	0.75445	7.33136

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)	0.28835	1.42391	13.95900
	B->S (-F)	0.28514	1.38320	13.99570
	CI->S (-F)	0.27861	1.45112	14.61950
	CON->S (FF)	0.12884	0.67648	5.62055
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.28204	1.41957	13.95530
	B->S (-F)	0.27918	1.37895	13.99200
	CI->S (-F)	0.27225	1.44592	14.61150
	CON->S (FF)	0.12888	0.67645	5.62054

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	0.00201	0.00192	0.00286
	B	0.00237	0.00239	0.00333
	CI	0.00238	0.00249	0.00364
sky130_osu_sc_12T_hs__addf_l	A	0.00183	0.00173	0.00245
	B	0.00219	0.00218	0.00304
	CI	0.00221	0.00228	0.00323

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00590	0.00608	0.00929
	B	0.00619	0.00634	0.00912
	CI	0.00501	0.00516	0.00855
sky130_osu_sc_12T_hs__addf_l	A	0.00576	0.00586	0.00796
	B	0.00604	0.00616	0.00787
	CI	0.00529	0.00549	0.00732

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00631	0.00631	0.00719
	B	0.00618	0.00628	0.00720
	CI	0.00544	0.00560	0.00669
sky130_osu_sc_12T_hs__addf_l	A	0.00617	0.00617	0.00702
	B	0.00604	0.00613	0.00704
	CI	0.00529	0.00545	0.00652

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00198	0.00188	0.00226
	B	0.00235	0.00231	0.00274
	CI	0.00237	0.00244	0.00308
sky130_osu_sc_12T_hs__addf_l	A	0.00181	0.00170	0.00212
	B	0.00217	0.00214	0.00264
	CI	0.00220	0.00226	0.00291

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00590	0.00603	0.00889
	B	0.00619	0.00633	0.00874
	CI	0.00544	0.00567	0.00817
sky130_osu_sc_12T_hs__addf_l	A	0.00576	0.00588	0.00867
	B	0.00605	0.00618	0.00853
	CI	0.00530	0.00551	0.00796

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01277	0.01279	0.01415
	B	0.01175	0.01143	0.01451
	CI	0.01055	0.01043	0.01191
sky130_osu_sc_12T_hs__addf_l	A	0.01277	0.01280	0.01416
	B	0.01177	0.01143	0.01451
	CI	0.01054	0.01043	0.01191

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00533	0.00559	0.89484	0.91956	0.93823
sky130_osu_sc_12T_hs__addh_l	0.00520	0.00551	0.64485	0.92523	0.65836

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.03118	0.03295
sky130_osu_sc_12T_hs__addh_l	0.00000	0.17495	0.17687

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)	0.13886	0.84169	7.94827
	B->CO (RR)	0.14261	0.84155	8.07708
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.11181	0.79490	6.92809
	B->CO (RR)	0.11471	0.79063	6.98579

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)	0.11887	0.73303	6.65562
	B->CO (FF)	0.12456	0.74980	6.74358
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.10322	0.65792	5.53839
	B->CO (FF)	0.10860	0.67419	5.62354

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)	0.19289	0.87470	7.96262
	B->CON (RR)	0.19650	0.87322	8.08884
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.15212	0.76867	7.12162
	B->CON (RR)	0.15489	0.76179	7.17723

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)	0.15593	0.76185	6.76503
	B->CON (FF)	0.15475	0.77235	6.84778
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.12664	0.65583	5.84243
	B->CON (FF)	0.12663	0.66719	5.91032

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)	0.22059	1.60305	18.04650
	B->S (FR)	0.21950	1.61549	18.17750
	CON->S (FR)	0.03466	0.82636	12.08990
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.18544	1.38205	13.80240
	B->S (FR)	0.18558	1.39337	13.87430
	CON->S (FR)	0.03794	0.86055	11.47480

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)	0.25139	1.64378	18.31080
	B->S (RF)	0.25491	1.64339	18.43390
	CON->S (RF)	0.02487	0.62053	9.17026
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.19787	1.26070	11.87370
	B->S (RF)	0.20058	1.25344	11.92420
	CON->S (RF)	0.02182	0.53235	7.32463

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	0.00318	0.00303	0.00339
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00280	0.00298
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00272	0.00256	0.00352
	B	0.00000	0.00000	0.00000
	B	0.00248	0.00232	0.00316

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	0.00441	0.00425	0.00470
	B	0.00000	0.00000	0.00000
	B	0.00461	0.00462	0.00508
sky130_osu_sc_12T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00398	0.00384	0.00506
	B	0.00000	0.00000	0.00000
	B	0.00418	0.00418	0.00543

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	0.00317	0.00303	0.00338
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00280	0.00298
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00273	0.00256	0.00353
	B	0.00000	0.00000	0.00000
	B	0.00249	0.00232	0.00317

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	0.00441	0.00425	0.00465
	B	0.00000	0.00000	0.00000
	B	0.00461	0.00462	0.00507
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00398	0.00382	0.00498
	B	0.00000	0.00000	0.00000
	B	0.00418	0.00417	0.00519

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	0.00442	0.00426	0.00473
	B	0.00000	0.00000	0.00000
	B	0.00462	0.00462	0.00498
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00399	0.00384	0.00511
	B	0.00000	0.00000	0.00000
	B	0.00418	0.00418	0.00548

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	0.00317	0.00302	0.00342
	B	0.00000	0.00000	0.00000
	B	0.00293	0.00280	0.00295
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00273	0.00256	0.00356
	B	0.00000	0.00000	0.00000
	B	0.00248	0.00231	0.00330

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)	0.65481	0.62569	0.17760
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.65669	0.62748	0.17807

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)	0.65471	0.62511	0.17784
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.65662	0.62695	0.17822

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00279	0.00291	0.90656
sky130_osu_sc_12T_hs__and2_2	0.00279	0.00291	1.81395
sky130_osu_sc_12T_hs__and2_4	0.00279	0.00291	3.52088
sky130_osu_sc_12T_hs__and2_6	0.00282	0.00290	5.18876
sky130_osu_sc_12T_hs__and2_8	0.00279	0.00291	6.80131
sky130_osu_sc_12T_hs__and2_l	0.00216	0.00224	0.65235

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.01560	0.02438
sky130_osu_sc_12T_hs__and2_2	0.00000	0.02440	0.02708
sky130_osu_sc_12T_hs__and2_4	0.00000	0.04201	0.04606
sky130_osu_sc_12T_hs__and2_6	0.00000	0.05962	0.06774
sky130_osu_sc_12T_hs__and2_8	0.00000	0.07723	0.08942
sky130_osu_sc_12T_hs__and2_l	0.00000	0.18986	0.30350

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)	0.08709	0.69171	6.93909
	B->Y (RR)	0.09204	0.69339	6.96572
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.09652	0.61942	7.11804
	B->Y (RR)	0.10149	0.61493	7.13201
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.13089	0.61861	7.44336
	B->Y (RR)	0.13580	0.60548	7.43575
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.16527	0.64929	7.68328
	B->Y (RR)	0.16991	0.62971	7.65455
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.19823	0.68468	7.91370
	B->Y (RR)	0.20314	0.66344	7.87204
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.08943	0.74648	6.96125
	B->Y (RR)	0.09430	0.74790	6.93770

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)**	0.08232	0.58249	5.37706
	B->Y (FF)	0.08565	0.59682	5.45069
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.09727	0.57319	5.63478
	B->Y (FF)	0.09977	0.58355	5.70606
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.13851	0.61636	6.05310
	B->Y (FF)	0.13835	0.61806	6.10335
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.18170	0.66356	6.36624
	B->Y (FF)	0.17879	0.66140	6.40074
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.22222	0.70609	6.59859
	B->Y (FF)	0.21693	0.70127	6.62273
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.08185	0.56962	4.81813
	B->Y (FF)	0.08944	0.58945	4.88141

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	0.00212	0.00187	0.00572
	B	0.00000	0.00000	0.00000
	B	0.00217	0.00183	0.00418
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00393	0.00389	0.00747
	B	0.00000	0.00000	0.00000
	B	0.00398	0.00385	0.00610
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00808	0.00833	0.01159
	B	0.00000	0.00000	0.00000
	B	0.00813	0.00836	0.01041
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01231	0.01275	0.01648
	B	0.00000	0.00000	0.00000
	B	0.01234	0.01284	0.01553
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01654	0.01716	0.02090
	B	0.00000	0.00000	0.00000
	B	0.01660	0.01721	0.02002
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00168	0.00155	0.00726
	B	0.00000	0.00000	0.00000
	B	0.00171	0.00150	0.00545

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	0.00536	0.00538	0.00939
	B	0.00000	0.00000	0.00000
	B	0.00609	0.00602	0.00977
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00671	0.00702	0.01092
	B	0.00000	0.00000	0.00000
	B	0.00746	0.00763	0.01129
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01009	0.01093	0.01477
	B	0.00000	0.00000	0.00000
	B	0.01084	0.01151	0.01510
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01375	0.01493	0.01890
	B	0.00000	0.00000	0.00000
	B	0.01439	0.01556	0.01912
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01714	0.01875	0.02285
	B	0.00000	0.00000	0.00000
	B	0.01786	0.01934	0.02296
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00414	0.00428	0.01037
	B	0.00000	0.00000	0.00000
	B	0.00468	0.00480	0.01064

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)	-0.00181	-0.00184	-0.00184
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00181	-0.00182	-0.00184
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00181	-0.00183	-0.00184
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00183	-0.00185	-0.00186
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00181	-0.00183	-0.00184
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00129	-0.00130	-0.00130

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)	0.00183	0.00186	0.00184
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00186	0.00184
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00186	0.00184
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00185	0.00187	0.00186
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00185	0.00184
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00130	0.00132	0.00131

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)	-0.00173	-0.00173	-0.00173
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00173	-0.00174	-0.00173
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00173	-0.00174	-0.00173
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00173	-0.00174	-0.00173
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00173	-0.00174	-0.00173
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00122	-0.00123	-0.00122

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)	0.00177	0.00174	0.00174
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00177	0.00174	0.00174
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00177	0.00176	0.00174
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00177	0.00176	0.00174
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00177	0.00176	0.00174
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00126	0.00125	0.00123

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00255	0.00273	0.00272	0.38317

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00669	0.01090

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)	0.11705	1.07686	11.36950
	A1->Y (FR)	0.09501	0.99279	10.81890
	B0->Y (FR)	0.09020	1.04555	11.54460

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)	0.04470	0.48102	5.35461
	A1->Y (RF)	0.04088	0.50493	5.83184
	B0->Y (RF)	0.02666	0.45715	5.48290

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	0.00443	0.00436	0.00449
	A1	0.00000	0.00000	0.00000
	A1	0.00372	0.00364	0.00376
	B0	0.00363	0.00356	0.00406

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	0.00097	0.00082	0.00100
	A1	0.00000	0.00000	0.00000
	A1	0.00098	0.00083	0.00112
	B0	-0.00032	-0.00036	-0.00011

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)	-0.00132	-0.00148	-0.00148
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00150	-0.00151	-0.00150
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00150	-0.00151	-0.00150

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)	0.00147	0.00148	0.00148
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00151	0.00152	0.00151
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00154	0.00152	0.00151

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)	-0.00133	-0.00148	-0.00148
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00150	-0.00151	-0.00151
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00166	-0.00167	-0.00168

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)	0.00147	0.00148	0.00148
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00150	0.00152	0.00151
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00168	0.00171	0.00168

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)	-0.00075	-0.00076	-0.00075

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)	0.00084	0.00084	0.00077

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00255	0.00273	0.00285	0.00267	0.38249

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00828	0.02168

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)	0.14931	1.11685	11.43820
	A1->Y (FR)	0.13352	1.09523	11.38180
	B0->Y (FR)	0.09463	1.04946	11.54190
	B1->Y (FR)	0.11080	1.07074	11.60950

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)	0.05769	0.49615	5.36913
	A1->Y (RF)	0.05379	0.51983	5.84720
	B0->Y (RF)	0.03297	0.49310	5.81370
	B1->Y (RF)	0.03720	0.46912	5.33803

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	0.00549	0.00542	0.00551
	A1	0.00479	0.00469	0.00477
	B0	0.00386	0.00375	0.00434
	B1	0.00456	0.00450	0.00510

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00191	0.00176	0.00193
	A1	0.00192	0.00179	0.00204
	B0	-0.00019	-0.00024	0.00008
	B1	-0.00016	-0.00022	-0.00002

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)	-0.00136	-0.00147	-0.00147
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00150	-0.00151	-0.00150
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00150	-0.00150	-0.00150
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00150	-0.00151	-0.00150

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)	0.00147	0.00148	0.00147
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00151	0.00152	0.00151
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00155	0.00152	0.00151
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00155	0.00152	0.00151

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)	-0.00135	-0.00148	-0.00148
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00150	-0.00151	-0.00151
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00165	-0.00166	-0.00167
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00165	-0.00166	-0.00167

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)	0.00147	0.00149	0.00148
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00150	0.00152	0.00151
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00167	0.00169	0.00167
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00167	0.00169	0.00167

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)	-0.00075	-0.00076	-0.00075
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00074	-0.00075	-0.00075
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00173	-0.00174	-0.00175
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00173	-0.00175	-0.00175

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)	0.00088	0.00088	0.00078
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00074	0.00075	0.00075
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00174	0.00175	0.00175
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00174	0.00175	0.00175

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)	-0.00076	-0.00077	-0.00076
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00075	-0.00076	-0.00076
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00159	-0.00159	-0.00159
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00159	-0.00159	-0.00159

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)	0.00088	0.00089	0.00079
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00076	0.00076	0.00076
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00164	0.00160	0.00159
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00164	0.00160	0.00159

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00291	0.85329
sky130_osu_sc_12T_hs__buf_2	0.00291	1.74492
sky130_osu_sc_12T_hs__buf_4	0.00290	3.49669
sky130_osu_sc_12T_hs__buf_6	0.00082	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00291	6.81243
sky130_osu_sc_12T_hs__buf_l	0.00221	0.65517

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.01354	0.01354
sky130_osu_sc_12T_hs__buf_2	0.00000	0.02031	0.02438
sky130_osu_sc_12T_hs__buf_4	0.00000	0.03385	0.04606
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.06093	0.08942
sky130_osu_sc_12T_hs__buf_l	0.00000	0.15238	0.15238

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)**	0.06709	0.67098	6.84765
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.06956	0.57568	6.91182
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.09200	0.55641	7.30027
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.13660	0.59233	7.68235
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.06863	0.71197	6.83324

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)**	0.07773	0.56522	5.13434
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.09261	0.56325	5.48613
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.13388	0.60927	6.00652
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.21717	0.70100	6.58916
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.07947	0.56507	4.81946

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	0.00204	0.00172	0.00461
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00384	0.00367	0.00642
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00797	0.00817	0.01101
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01625	0.01699	0.02062
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00162	0.00143	0.00637

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	0.00523	0.00517	0.00896
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00656	0.00669	0.01039
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01001	0.01057	0.01413
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01707	0.01840	0.02192
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00410	0.00430	0.01036

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
	-0.00046	-0.00046	-0.00044

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
	0.00046	0.00046	0.00044

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00267	0.00266	0.00849	0.89803	0.89640
sky130_osu_sc_12T_hs__dffr_l	0.00267	0.00266	0.00849	0.64997	0.65187

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.12226	0.24598
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.26110	0.38482

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)	0.38039	1.46921	13.62690
	QN->Q (FR)	0.03673	0.88945	12.82060
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.37100	1.51634	12.81700
	QN->Q (FR)	0.03991	0.90468	12.01220

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)	0.36969	1.52463	14.91120
	QN->Q (RF)	0.02242	0.55615	8.16387
	RN->Q (FF)	0.26914	1.57125	16.70840
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.37242	1.63728	14.60320
	QN->Q (RF)	0.02361	0.56556	7.78075
	RN->Q (FF)	0.27231	1.68470	16.38460

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)	0.33221	0.94436	7.17206
	RN->QN (FR)	0.23146	0.99091	8.96723
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.32994	0.99771	7.08181
	RN->QN (FR)	0.22960	1.04364	8.86335

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)**	0.32097	0.72854	3.79325
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.30974	0.72798	3.57582

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)	-0.06212	-0.08026	-0.23886
	setup	CK (R)	0.28776	0.30930	1.44021
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.06200	-0.08052	-0.23858
	setup	CK (R)	0.28870	0.30985	1.45332

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)	-0.16085	-0.40837	-4.03969
	setup	CK (R)	0.19159	0.42075	4.14779
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.16361	-0.40776	-4.04000
	setup	CK (R)	0.19165	0.42075	4.14829

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)	-0.06212	-0.08026	-0.23886
	setup	CK (R)	0.28776	0.30930	1.44021
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.06200	-0.08052	-0.23858
	setup	CK (R)	0.28870	0.30985	1.45332

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)	-0.16085	-0.40837	-4.03969
	setup	CK (R)	0.19159	0.42075	4.14779
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.16361	-0.40776	-4.04000
	setup	CK (R)	0.19165	0.42075	4.14829

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)	0.25507	0.28042	1.43983
	removal	CK (R)	-0.04870	-0.06000	-0.08408
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.25422	0.27920	1.46061
	removal	CK (R)	-0.04749	-0.05942	-0.08429

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)	0.25507	0.28042	1.43983
	removal	CK (R)	-0.04870	-0.06000	-0.08408
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.25422	0.27920	1.46061
	removal	CK (R)	-0.04749	-0.05942	-0.08429

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 ()	0.16764	0.41626	13.33370
	min_pulse_width	RN ()	0.17078	0.41626	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.16449	0.41626	13.33370
	min_pulse_width	RN ()	0.16449	0.41626	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 ()	0.16764	0.41626	13.33370
	min_pulse_width	CK ()	0.19596	0.41626	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.15820	0.41626	13.33370
	min_pulse_width	CK ()	0.19281	0.41626	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 ()	0.37900	0.46774	13.33370
	min_pulse_width	CK ()	0.15505	0.41626	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.38081	0.46997	13.33370
	min_pulse_width	CK ()	0.15505	0.41626	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	0.00540	0.00443	-0.00076
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00490	0.00410	0.00210

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	0.00606	0.00536	0.00076
	RN	-0.00070	-0.03624	-0.50514
	RN	0.01373	0.01316	0.00873
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00555	0.00500	0.00344
	RN	-0.00070	-0.02985	-0.36561
	RN	0.01322	0.01280	0.01139

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	0.00607	0.00536	0.00079
	RN	-0.00070	-0.03621	-0.50423
	RN	0.01373	0.01316	0.00870
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00555	0.00501	0.00345
	RN	-0.00070	-0.02991	-0.36668
	RN	0.01322	0.01281	0.01137

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	0.00537	0.00440	-0.00079
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00487	0.00407	0.00209

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	-0.00126	-0.00148	-0.00150
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00666	0.00631	0.00809
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00269	0.00239	0.00427
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00126	-0.00148	-0.00150
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00666	0.00632	0.00809
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00269	0.00239	0.00427

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	0.00148	0.00150	0.00150
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00990	0.00972	0.01159
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00485	0.00468	0.00654
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00149	0.00150	0.00150
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00990	0.00972	0.01159
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00485	0.00468	0.00654

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)	0.00211	0.00178	0.00542
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00627	0.00578	0.00956
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)	0.00212	0.00178	0.00542
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00628	0.00579	0.00956

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)	0.00537	0.00530	0.00936
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01052	0.01013	0.01425
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)	0.00537	0.00530	0.00936
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01052	0.01014	0.01426

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)	-0.00032	-0.00079	0.00274
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00337	0.00253	0.00604
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00035	-0.00083	0.00273
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00032	-0.00079	0.00275
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00337	0.00254	0.00604
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00035	-0.00083	0.00273

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)	0.00826	0.00799	0.01217
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01657	0.01598	0.02004
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01238	0.01204	0.01592
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01625	0.01574	0.02360
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00873	0.00846	0.01254
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00826	0.00800	0.01217
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01657	0.01599	0.02006
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01239	0.01204	0.01592
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01625	0.01574	0.02361
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00873	0.00846	0.01254

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00263	0.00267	0.00623	0.00854	0.93135	0.92968
sky130_osu_sc_12T_hs__dffsr_l	0.00263	0.00267	0.00623	0.00854	0.65512	0.65434

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.05128	0.06510
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.19012	0.20394

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)	0.40859	1.51576	14.00790
	QN->Q (FR)	0.03469	0.86090	12.58390
	RN->Q (RR)	0.32879	1.44577	14.04240
	SN->Q (FR)	0.31470	1.55926	16.19040
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.40499	1.56930	13.03120
	QN->Q (FR)	0.03983	0.90629	12.06360
	RN->Q (RR)	0.32549	1.50060	13.06600
	SN->Q (FR)	0.31096	1.61361	15.19220

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)	0.42549	1.58803	15.20680
	QN->Q (RF)	0.02226	0.56176	8.30382
	RN->Q (FF)	0.28540	1.59484	17.02260
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.42926	1.70675	14.78510
	QN->Q (RF)	0.02347	0.56635	7.80505
	RN->Q (FF)	0.29040	1.71297	16.58060

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)	0.38735	1.00202	7.26781
	RN->QN (FR)	0.24802	1.00837	9.07775
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.38587	1.06196	7.18190
	RN->QN (FR)	0.24766	1.06909	8.97862

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)	0.35193	0.77732	4.03603
	RN->QN (RF)	0.27269	0.70866	4.07355
	SN->QN (FF)	0.25872	0.82225	6.21662
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.34509	0.77696	3.70571
	RN->QN (RF)	0.26585	0.70943	3.74071
	SN->QN (FF)	0.25170	0.82228	5.86689

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)	-0.07503	-0.09487	-0.32888
	setup	CK (R)	0.30553	0.31963	1.44046
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.07446	-0.09480	-0.32841
	setup	CK (R)	0.30595	0.31985	1.44074

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)	-0.18638	-0.43030	-4.19781
	setup	CK (R)	0.22254	0.44144	4.26863
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.18648	-0.42941	-4.19683
	setup	CK (R)	0.22254	0.44144	4.26856

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)	-0.07503	-0.09487	-0.32888
	setup	CK (R)	0.30553	0.31963	1.44046
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.07446	-0.09480	-0.32841
	setup	CK (R)	0.30595	0.31985	1.44074

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)	-0.18638	-0.43030	-4.19781
	setup	CK (R)	0.22254	0.44144	4.26863
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.18648	-0.42941	-4.19683
	setup	CK (R)	0.22254	0.44144	4.26856

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)	0.24351	0.26121	1.36073
	removal	CK (R)	-0.03543	-0.04575	-0.10485
	hold	SN (R)	-0.24685	-0.40904	-2.25259
	setup	SN (R)	0.27377	0.44630	5.78712
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.24328	0.26213	1.36782
	removal	CK (R)	-0.03543	-0.04575	-0.10485
	hold	SN (R)	-0.23775	-0.39811	-2.19669
	setup	SN (R)	0.27288	0.43585	5.73537

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)	0.24351	0.26121	1.36073
	removal	CK (R)	-0.03543	-0.04575	-0.10485
	hold	SN (R)	-0.24685	-0.40904	-2.25259
	hold	SN (R)	-0.24987	-0.41054	-2.26410
	setup	SN (R)	0.27377	0.44579	5.61662
	setup	SN (R)	0.27337	0.44630	5.78712
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.24328	0.26213	1.36782
	removal	CK (R)	-0.03543	-0.04575	-0.10485
	hold	SN (R)	-0.23981	-0.39811	-2.19669
	hold	SN (R)	-0.23775	-0.40096	-2.21096
	setup	SN (R)	0.27288	0.43273	5.53334
	setup	SN (R)	0.26153	0.43585	5.73537

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 ()	0.19281	0.41626	13.33370
	min_pulse_width	RN ()	0.19911	0.41626	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.19281	0.41626	13.33370
	min_pulse_width	RN ()	0.19596	0.41626	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)	0.04431	0.07198	4.40079
	removal	CK (R)	-0.01542	-0.04976	-0.36862
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04504	0.07182	4.25169
	removal	CK (R)	-0.01542	-0.04976	-0.36862

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)	0.04431	0.07198	4.40079
	removal	CK (R)	-0.01542	-0.04976	-0.36862
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04504	0.07182	4.25169
	removal	CK (R)	-0.01542	-0.04976	-0.36862

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 ()	0.25357	0.47221	13.33370
	min_pulse_width	SN ()	0.26195	0.47445	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.25121	0.46102	13.33370
	min_pulse_width	SN ()	0.24889	0.46326	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 ()	0.18337	0.41626	13.33370
	min_pulse_width	CK ()	0.21799	0.41626	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.17708	0.41626	13.33370
	min_pulse_width	CK ()	0.21484	0.41626	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 ()	0.40069	0.47669	13.33370
	min_pulse_width	CK ()	0.18967	0.41626	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.39892	0.47893	13.33370
	min_pulse_width	CK ()	0.18967	0.41626	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	0.00664	0.00568	-0.00042
	RN	0.01213	0.01136	0.00349
	SN	-0.00070	-0.03705	-0.52388
	SN	0.01341	0.01258	0.00452
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00617	0.00539	0.00353
	RN	0.01166	0.01107	0.00762
	SN	-0.00070	-0.03000	-0.36851
	SN	0.01294	0.01230	0.00821

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	0.00704	0.00650	0.00356
	RN	-0.00070	-0.03705	-0.52388
	RN	0.01443	0.01398	0.01120
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00654	0.00603	0.00448
	RN	-0.00070	-0.03000	-0.36851
	RN	0.01392	0.01349	0.01211

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	0.00704	0.00651	0.00356
	RN	-0.00070	-0.03701	-0.52295
	RN	0.01444	0.01398	0.01114
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00654	0.00604	0.00450
	RN	-0.00070	-0.02997	-0.36806
	RN	0.01393	0.01351	0.01210

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	0.00660	0.00566	-0.00060
	RN	0.01210	0.01132	0.00360
	SN	-0.00070	-0.03701	-0.52291
	SN	0.01338	0.01255	0.00432
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00613	0.00536	0.00328
	RN	0.01162	0.01103	0.00740
	SN	-0.00070	-0.02997	-0.36804
	SN	0.01291	0.01226	0.00835

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	-0.00147	-0.00151	-0.00150
	(!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)	0.00830	0.00798	0.00974
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00293	0.00264	0.00445
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00290	0.00262	0.00444
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00293	0.00265	0.00447
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00147	-0.00149	-0.00150
	(!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)	0.00830	0.00798	0.00975
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00293	0.00264	0.00445
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00290	0.00262	0.00444
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00293	0.00265	0.00447

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	0.00154	0.00151	0.00150
	(!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)	0.01142	0.01122	0.01288
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00527	0.00513	0.00699
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00531	0.00517	0.00699
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00525	0.00511	0.00696
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00154	0.00151	0.00150
	(!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)	0.01142	0.01122	0.01288
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00527	0.00513	0.00699
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00531	0.00517	0.00700
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00525	0.00511	0.00696

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)	0.00179	0.00145	0.00498
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00741	0.00691	0.01031
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)	0.00179	0.00145	0.00498
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00741	0.00691	0.01031

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)	0.00585	0.00580	0.00993
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01114	0.01077	0.01483
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)	0.00585	0.00580	0.00993
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01114	0.01075	0.01483

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)	-0.00386	-0.00388	-0.00390
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00391	-0.00420	-0.00421
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00376	-0.00392	-0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00190	0.00155	0.00367
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)	-0.00386	-0.00388	-0.00390
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00391	-0.00420	-0.00421
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00375	-0.00392	-0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00190	0.00155	0.00367

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)	0.00390	0.00398	0.00390
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00419	0.00422	0.00421
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00391	0.00392	0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00892	0.00867	0.01027
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)	0.00390	0.00398	0.00391
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00419	0.00422	0.00421
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00391	0.00392	0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00892	0.00867	0.01027

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)	-0.00037	-0.00084	0.00268
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00394	0.00316	0.00665
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00388	0.00310	0.00660
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00026	-0.00069	0.00281
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00208	0.00134	0.00839
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00037	-0.00084	0.00268
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00394	0.00316	0.00665
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00388	0.00310	0.00660
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00026	-0.00069	0.00281
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00208	0.00134	0.00840

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)	0.01843	0.01785	0.02187
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00841	0.00813	0.01231
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01254	0.01223	0.01612
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01260	0.01225	0.01616
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01783	0.01725	0.02497
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00873	0.00845	0.01252
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01114	0.01066	0.01883
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01843	0.01785	0.02187
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00841	0.00814	0.01231
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01254	0.01223	0.01612
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01260	0.01225	0.01616
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01783	0.01726	0.02497
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00874	0.00845	0.01253
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01114	0.01066	0.01883

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00264	0.00522	0.00844	0.89674	0.89852
sky130_osu_sc_12T_hs__dffs_l	0.00264	0.00522	0.00844	0.64878	0.65161

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.23583	0.63665
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.37467	0.77549

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)	0.27082	1.33895	13.46130
	QN->Q (FR)	0.03674	0.88584	12.76900
	SN->Q (FR)	0.21785	1.43497	15.13600
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.26866	1.39646	12.66060
	QN->Q (FR)	0.03988	0.90158	11.97040
	SN->Q (FR)	0.21455	1.48789	14.30520

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)	0.40662	1.56296	14.90360
	QN->Q (RF)	0.02233	0.55428	8.13767
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.40603	1.67218	14.59220
	QN->Q (RF)	0.02353	0.56377	7.75749

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)	0.36785	0.98569	7.21156
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.36238	1.03370	7.10357

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)	0.21854	0.60411	3.67454
	SN->QN (FF)	0.16459	0.70090	5.35010
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.21379	0.61190	3.45738
	SN->QN (FF)	0.15906	0.70420	5.09746

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)	-0.04789	-0.06419	-0.20227
	setup	CK (R)	0.19332	0.21850	1.45553
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.04783	-0.06468	-0.20216
	setup	CK (R)	0.19377	0.21835	1.48121

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)	-0.16721	-0.41139	-4.03825
	setup	CK (R)	0.20698	0.42537	4.18388
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.16691	-0.41212	-4.03265
	setup	CK (R)	0.20698	0.42538	4.18388

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)	-0.04789	-0.06419	-0.20227
	setup	CK (R)	0.19332	0.21850	1.45553
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.04783	-0.06468	-0.20216
	setup	CK (R)	0.19377	0.21835	1.48121

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)	-0.16721	-0.41139	-4.03825
	setup	CK (R)	0.20698	0.42537	4.18388
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.16691	-0.41212	-4.03265
	setup	CK (R)	0.20698	0.42538	4.18388

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)	0.04792	0.07502	3.47393
	removal	CK (R)	-0.01772	-0.05146	-0.44913
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.04684	0.07503	3.30566
	removal	CK (R)	-0.01772	-0.05146	-0.44913

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)	0.04792	0.07502	3.47393
	removal	CK (R)	-0.01772	-0.05146	-0.44913
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.04684	0.07503	3.30566
	removal	CK (R)	-0.01772	-0.05146	-0.44913

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 ()	0.15176	0.42521	13.33370
	min_pulse_width	SN ()	0.15498	0.42521	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.14875	0.41626	13.33370
	min_pulse_width	SN ()	0.14875	0.41626	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 ()	0.10784	0.41626	13.33370
	min_pulse_width	CK ()	0.20540	0.41626	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.10155	0.41626	13.33370
	min_pulse_width	CK ()	0.19911	0.41626	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 ()	0.28408	0.41626	13.33370
	min_pulse_width	CK ()	0.17708	0.41626	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.28408	0.41626	13.33370
	min_pulse_width	CK ()	0.17708	0.41626	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	0.00541	0.00443	-0.00095
	SN	-0.00070	-0.03621	-0.50442
	SN	0.01154	0.01073	0.00733
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00491	0.00410	0.00244
	SN	-0.00070	-0.02982	-0.36494
	SN	0.01102	0.01040	0.01097

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	0.00602	0.00535	0.00095
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00551	0.00500	0.00354

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	0.00603	0.00536	0.00095
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00552	0.00501	0.00355

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	0.00538	0.00440	-0.00095
	SN	-0.00070	-0.03626	-0.50538
	SN	0.01150	0.01068	0.00724
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00487	0.00407	0.00221
	SN	-0.00070	-0.02990	-0.36651
	SN	0.01099	0.01035	0.01066

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	-0.00149	-0.00152	-0.00153
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00656	0.00620	0.00810
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00267	0.00238	0.00423
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00149	-0.00152	-0.00153
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00656	0.00620	0.00810
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00267	0.00238	0.00423

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	0.00156	0.00153	0.00153
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00980	0.00958	0.01140
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00487	0.00473	0.00663
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00157	0.00154	0.00153
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00981	0.00958	0.01140
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00487	0.00473	0.00663

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)	-0.00286	-0.00289	-0.00289
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00190	0.00157	0.00608
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)	-0.00285	-0.00289	-0.00288
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00190	0.00158	0.00609

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)	0.00290	0.00292	0.00289
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00631	0.00609	0.01191
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)	0.00290	0.00292	0.00289
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00630	0.00608	0.01191

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)	-0.00032	-0.00079	0.00274
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00030	-0.00077	0.00279
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00188	0.00114	0.00834
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00032	-0.00079	0.00274
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00030	-0.00077	0.00279
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00188	0.00114	0.00834

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)	0.01653	0.01596	0.02011
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00826	0.00798	0.01217
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01606	0.01543	0.02331
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00868	0.00840	0.01249
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01056	0.01013	0.01838
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01653	0.01596	0.02011
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00826	0.00798	0.01217
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01606	0.01543	0.02331
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00868	0.00840	0.01249
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01057	0.01013	0.01838

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00280	0.00839	0.82903
sky130_osu_sc_12T_hs__dff_l	0.00280	0.00839	0.61232

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.04599	0.05385
sky130_osu_sc_12T_hs__dff_l	0.00000	0.18483	0.19269

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)	0.23181	0.84964	6.98182
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.22940	0.89793	6.83906

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)	0.34769	0.71865	3.62450
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.34688	0.73617	3.48703

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)	-0.04454	-0.06645	-0.24256
	setup	CK (R)	0.15302	0.18532	1.47385
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.04454	-0.06645	-0.24267
	setup	CK (R)	0.15352	0.18597	1.47784

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)	-0.15759	-0.41168	-4.04098
	setup	CK (R)	0.18710	0.42565	4.20090
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.15544	-0.41209	-4.04583
	setup	CK (R)	0.18712	0.42562	4.20091

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 ()	0.09525	0.41626	13.33370
	min_pulse_width	CK ()	0.18967	0.41626	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.09211	0.41626	13.33370
	min_pulse_width	CK ()	0.18337	0.41626	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 ()	0.24632	0.41626	13.33370
	min_pulse_width	CK ()	0.14875	0.41626	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.24632	0.41626	13.33370
	min_pulse_width	CK ()	0.14875	0.41626	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	0.01136	0.01037	0.01666
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01031	0.00932	0.01564

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	0.01226	0.01159	0.01497
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01123	0.01057	0.01397

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	-0.00125	-0.00147	-0.00149
	!CK	0.00000	0.00000	0.00000
	!CK	0.00589	0.00553	0.00734
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00125	-0.00147	-0.00149
	!CK	0.00000	0.00000	0.00000
	!CK	0.00589	0.00553	0.00734

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	0.00147	0.00149	0.00149
	!CK	0.00000	0.00000	0.00000
	!CK	0.01013	0.00986	0.01176
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00148	0.00149	0.00149
	!CK	0.00000	0.00000	0.00000
	!CK	0.01013	0.00987	0.01177

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)	-0.00035	-0.00080	0.00273
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00030	-0.00077	0.00280
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00035	-0.00081	0.00273
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00030	-0.00077	0.00280

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)	0.00823	0.00796	0.01216
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01586	0.01528	0.01949
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01626	0.01562	0.02359
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00862	0.00835	0.01244
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00823	0.00797	0.01216
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01586	0.01528	0.01949
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01626	0.01563	0.02360
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00862	0.00835	0.01244

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00270	0.83809
sky130_osu_sc_12T_hs__inv_10	0.02399	8.37467
sky130_osu_sc_12T_hs__inv_2	0.00499	1.73023
sky130_osu_sc_12T_hs__inv_3	0.00738	2.54244
sky130_osu_sc_12T_hs__inv_4	0.00972	3.43297
sky130_osu_sc_12T_hs__inv_6	0.01455	5.11938
sky130_osu_sc_12T_hs__inv_8	0.01927	6.76907
sky130_osu_sc_12T_hs__inv_l	0.00216	0.58790

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00677	0.01084
sky130_osu_sc_12T_hs__inv_10	0.00000	0.06770	0.10840
sky130_osu_sc_12T_hs__inv_2	0.00000	0.01354	0.02168
sky130_osu_sc_12T_hs__inv_3	0.00000	0.02031	0.03252
sky130_osu_sc_12T_hs__inv_4	0.00000	0.02708	0.04336
sky130_osu_sc_12T_hs__inv_6	0.00000	0.04062	0.06504
sky130_osu_sc_12T_hs__inv_8	0.00000	0.05416	0.08672
sky130_osu_sc_12T_hs__inv_l	0.00000	0.07619	0.15112

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)**	0.03573	0.82850	11.80410
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.03781	0.53867	11.76610
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.02560	0.69932	11.76270
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.02720	0.64758	11.78440
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.02633	0.61321	11.76740
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.02889	0.57286	11.77150
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.03295	0.55153	11.75110
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.04010	0.84993	11.02630

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)**	0.02064	0.49998	7.19407
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02591	0.33063	7.41552
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01631	0.43799	7.33309
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01748	0.40880	7.41217
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01710	0.38680	7.42683
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01997	0.35827	7.45206
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02286	0.34129	7.44539
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02243	0.51248	6.86770

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	0.00264	0.00248	0.00311
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02126	0.02221	0.02695
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00450	0.00457	0.00558
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00694	0.00652	0.00836
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00879	0.00903	0.01105
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01300	0.01322	0.01654
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01715	0.01781	0.02198
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00211	0.00215	0.00310

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	-0.00040	-0.00041	-0.00020
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00756	-0.00730	-0.00402
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00139	-0.00136	-0.00089
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00179	-0.00180	-0.00100
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00285	-0.00281	-0.00169
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00434	-0.00407	-0.00249
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00593	-0.00573	-0.00326
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00029	-0.00030	-0.00011

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.12675	0.12665	0.00557	0.12365

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.01366	0.01366

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)	-	0.01384	0.25214	2.23315
	A1->Y (RR)	-	0.01715	0.25470	2.23702
	S0->Y (RR)	(!A0 * A1)	0.04837	0.28370	0.82966
	S0->Y (FR)	(A0 * !A1)	0.03779	0.42031	3.20305

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)	-	0.01633	0.23356	2.12383
	A1->Y (FF)	-	0.01423	0.23043	2.11802
	S0->Y (FF)	(!A0 * A1)	0.07659	0.39091	2.30381
	S0->Y (RF)	(A0 * !A1)	0.02262	0.26565	1.75874

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	-	-0.00267	-0.00268	-0.00268
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00173	-0.00173	-0.00173
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00349	0.00341	0.00797
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00162	-0.00199	0.00206

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	-	0.00267	0.00268	0.00268
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00173	0.00173	0.00173
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00051	0.00018	0.00436
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00712	0.00699	0.01136

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)	-0.00065	-0.00065	-0.00065

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)	0.00065	0.00065	0.00065

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)	-0.00077	-0.00077	-0.00077

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)	0.00077	0.00077	0.00077

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)	-0.00057	-0.00090	0.00323
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00055	-0.00088	0.00323

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)	0.00547	0.00532	0.00977
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00514	0.00502	0.00959

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00268	0.00269	0.83344
sky130_osu_sc_12T_hs__nand2_l	0.00212	0.00215	0.58599

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00679	0.02168
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.07621	0.30224

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)	0.03731	0.83147	11.80270
	B->Y (FR)	0.04242	0.80594	11.36120
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.04058	0.85076	11.02400
	B->Y (FR)	0.04864	0.85740	11.01220

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)	0.03104	0.63292	8.96018
	B->Y (RF)	0.03529	0.61332	8.46493
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.03331	0.65203	8.51635
	B->Y (RF)	0.03742	0.63371	8.02185

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	0.00278	0.00264	0.00314
	B	0.00000	0.00000	0.00000
	B	0.00353	0.00351	0.00389
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00213	0.00217	0.00302
	B	0.00000	0.00000	0.00000
	B	0.00270	0.00271	0.00358

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	-0.00023	-0.00027	-0.00008
	B	0.00000	0.00000	0.00000
	B	-0.00022	-0.00028	-0.00014
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00015	-0.00018	-0.00000
	B	0.00000	0.00000	0.00000
	B	-0.00014	-0.00019	-0.00006

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)	-0.00175	-0.00176	-0.00177
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00125	-0.00125	-0.00126

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)	0.00176	0.00178	0.00177
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00125	0.00127	0.00126

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)	-0.00162	-0.00163	-0.00162
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00116	-0.00117	-0.00116

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)	0.00166	0.00165	0.00163
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00119	0.00118	0.00117

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00265	0.00292	0.43384
sky130_osu_sc_12T_hs__nor2_l	0.00203	0.00225	0.31006

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00561	0.01084
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.05164	0.15112

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)	0.08387	1.02766	11.63820
	B->Y (FR)	0.06789	1.00270	11.64860
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.08781	1.06671	11.02510
	B->Y (FR)	0.07545	1.02794	10.81590

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)	0.02604	0.41931	5.06748
	B->Y (RF)	0.02180	0.40991	5.05245
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02663	0.43030	4.88024
	B->Y (RF)	0.02329	0.42477	4.86728

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	0.00359	0.00352	0.00368
	B	0.00000	0.00000	0.00000
	B	0.00288	0.00283	0.00346
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00265	0.00260	0.00295
	B	0.00000	0.00000	0.00000
	B	0.00221	0.00221	0.00357

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	0.00043	0.00029	0.00061
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00032	-0.00002
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00032	0.00026	0.00054
	B	0.00000	0.00000	0.00000
	B	-0.00019	-0.00019	0.00008

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)	-0.00126	-0.00150	-0.00150
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00081	-0.00101	-0.00103

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)	0.00149	0.00150	0.00150
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00103	0.00103	0.00103

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)	-0.00075	-0.00076	-0.00075
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00053	-0.00053	-0.00053

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)	0.00080	0.00080	0.00077
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00056	0.00056	0.00054

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00269	0.00279	0.00237	0.42495

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.06047	0.16196

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)	0.09616	1.02390	11.55620
	A1->Y (FR)	0.11614	1.05471	11.54490
	B0->Y (FR)	0.05093	0.76212	9.25379

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)	0.04259	0.50008	5.74475
	A1->Y (RF)	0.04941	0.50034	5.68556
	B0->Y (RF)	0.03350	0.52852	6.42273

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	0.00400	0.00392	0.00449
	A1	0.00000	0.00000	0.00000
	A1	0.00476	0.00468	0.00481
	B0	0.00319	0.00322	0.00461

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	0.00023	0.00018	0.00035
	A1	0.00000	0.00000	0.00000
	A1	0.00099	0.00084	0.00102
	B0	0.00126	0.00122	0.00147

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)	-0.00076	-0.00076	-0.00076
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00150	-0.00152	-0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00155	-0.00156	-0.00155

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)	0.00081	0.00081	0.00077
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00151	0.00152	0.00152
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00157	0.00157	0.00156

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)	-0.00121	-0.00145	-0.00145
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00148	-0.00152	-0.00151
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00153	-0.00154	-0.00153

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)	0.00144	0.00145	0.00145
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00150	0.00152	0.00151
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00155	0.00155	0.00154

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)	-0.00130	-0.00130	-0.00134

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)	0.00134	0.00137	0.00134

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00253	0.00265	0.00282	0.00279	0.44632

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00832	0.02168

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)	0.12291	1.05627	11.62280
	A1->Y (FR)	0.10681	1.02863	11.65120
	B0->Y (FR)	0.07193	0.99517	11.62180
	B1->Y (FR)	0.08975	1.02239	11.59850

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)	0.06521	0.53829	5.96083
	A1->Y (RF)	0.05399	0.52380	5.92755
	B0->Y (RF)	0.04540	0.55248	6.61512
	B1->Y (RF)	0.05735	0.56536	6.67267

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	0.00601	0.00593	0.00605
	A1	0.00525	0.00518	0.00572
	B0	0.00379	0.00375	0.00429
	B1	0.00460	0.00452	0.00464

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00146	0.00133	0.00148
	A1	0.00077	0.00072	0.00086
	B0	0.00074	0.00071	0.00095
	B1	0.00147	0.00133	0.00158

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)	-0.00123	-0.00145	-0.00147
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00123	-0.00145	-0.00147
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00143	-0.00146	-0.00146
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00149	-0.00148	-0.00148

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)	0.00146	0.00147	0.00147
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00146	0.00147	0.00147
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00146	0.00147	0.00146
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00149	0.00150	0.00149

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)	-0.00073	-0.00074	-0.00074
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00073	-0.00074	-0.00074
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00143	-0.00145	-0.00145
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00148	-0.00149	-0.00148

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)	0.00078	0.00079	0.00075
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00078	0.00079	0.00075
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00144	0.00145	0.00145
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00149	0.00150	0.00149

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)	-0.00074	-0.00075	-0.00074
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00074	-0.00075	-0.00074
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00169	-0.00173	-0.00172
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00169	-0.00170	-0.00175

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)	0.00079	0.00080	0.00076
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00079	0.00080	0.00076
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00172	0.00173	0.00172
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00175	0.00179	0.00175

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)	-0.00122	-0.00144	-0.00146
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00122	-0.00144	-0.00146
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00173	-0.00176	-0.00176
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00173	-0.00173	-0.00178

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)	0.00145	0.00146	0.00146
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00145	0.00146	0.00146
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00176	0.00178	0.00176
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00179	0.00180	0.00179

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00300	0.00276	0.84456
sky130_osu_sc_12T_hs__or2_2	0.00300	0.00276	1.75431
sky130_osu_sc_12T_hs__or2_4	0.00300	0.00276	3.44658
sky130_osu_sc_12T_hs__or2_8	0.00299	0.00276	6.75405
sky130_osu_sc_12T_hs__or2_l	0.00229	0.00214	0.61245

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.01035	0.01624
sky130_osu_sc_12T_hs__or2_2	0.00000	0.01508	0.02708
sky130_osu_sc_12T_hs__or2_4	0.00000	0.02455	0.04876
sky130_osu_sc_12T_hs__or2_8	0.00000	0.04349	0.09212
sky130_osu_sc_12T_hs__or2_l	0.00000	0.09036	0.15364

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)	0.07567	0.69850	6.88324
	B->Y (RR)	0.06832	0.67312	6.77873
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.07887	0.60340	7.04937
	B->Y (RR)	0.07103	0.58190	6.95856
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.10146	0.57707	7.30524
	B->Y (RR)	0.09350	0.55936	7.23586
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.14621	0.60840	7.75470
	B->Y (RR)	0.13793	0.59545	7.69490
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.07777	0.74806	6.73394
	B->Y (RR)	0.07144	0.72578	6.70272

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)	0.15331	0.66913	5.52359
	B->Y (FF)	0.12868	0.63531	5.31265
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.18639	0.68236	5.94770
	B->Y (FF)	0.16220	0.65621	5.74430
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.26689	0.76075	6.46057
	B->Y (FF)	0.24268	0.73495	6.27199
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.42849	0.93959	7.11096
	B->Y (FF)	0.40429	0.90923	7.00435
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.15826	0.67281	5.07131
	B->Y (FF)	0.13628	0.63281	4.84923

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	0.00288	0.00252	0.00465
	B	0.00000	0.00000	0.00000
	B	0.00216	0.00195	0.00559
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00471	0.00453	0.00668
	B	0.00000	0.00000	0.00000
	B	0.00394	0.00399	0.00666
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00884	0.00905	0.01133
	B	0.00000	0.00000	0.00000
	B	0.00807	0.00855	0.01145
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01720	0.01794	0.02105
	B	0.00000	0.00000	0.00000
	B	0.01638	0.01747	0.02126
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00223	0.00201	0.00429
	B	0.00000	0.00000	0.00000
	B	0.00173	0.00161	0.00555

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	0.00620	0.00597	0.00768
	B	0.00000	0.00000	0.00000
	B	0.00523	0.00529	0.00901
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00758	0.00764	0.00920
	B	0.00000	0.00000	0.00000
	B	0.00658	0.00687	0.01039
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01104	0.01149	0.01303
	B	0.00000	0.00000	0.00000
	B	0.01006	0.01067	0.01406
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01880	0.01903	0.02079
	B	0.00000	0.00000	0.00000
	B	0.01773	0.01819	0.02171
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00470	0.00454	0.00692
	B	0.00000	0.00000	0.00000
	B	0.00403	0.00417	0.00974

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)	-0.00128	-0.00152	-0.00152
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00127	-0.00152	-0.00152
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00127	-0.00151	-0.00152
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00127	-0.00152	-0.00152
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00082	-0.00102	-0.00103

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)	0.00151	0.00152	0.00152
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00151	0.00152	0.00152
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00151	0.00151	0.00152
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00151	0.00152	0.00152
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00103	0.00104	0.00104

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)	-0.00076	-0.00076	-0.00076
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00076	-0.00076	-0.00076
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00076	-0.00076	-0.00076
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00076	-0.00076	-0.00076
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00052	-0.00052	-0.00052

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)	0.00080	0.00081	0.00077
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00081	0.00081	0.00077
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00081	0.00081	0.00077
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00081	0.00081	0.00077
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00055	0.00055	0.00053

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00289	0.00381	0.44440
sky130_osu_sc_12T_hs__tbufi_l	0.00226	0.00298	0.31218

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00798	0.02168
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.07691	0.30224

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)	0.06280	0.98603	11.58300
	OE->Y (FR)	0.05445	0.28135	4.44508
	OE->Y (RR)	0.09687	0.83912	6.92613
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.07254	1.02917	10.86070
	OE->Y (FR)	0.05458	0.27839	4.44506
	OE->Y (RR)	0.10210	0.90905	6.81041

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)	0.03035	0.51354	6.31599
	OE->Y (FF)	0.05550	0.28465	4.44509
	OE->Y (RF)	0.02889	0.48391	5.80721
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.03291	0.52848	6.00944
	OE->Y (FF)	0.05519	0.27838	4.44511
	OE->Y (RF)	0.03131	0.49889	5.52826

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	0.00269	0.00264	0.00321
	OE	0.00000	0.00000	0.00000
	OE	0.00258	0.00230	0.00616
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00208	0.00207	0.00329
	OE	0.00000	0.00000	0.00000
	OE	0.00191	0.00173	0.00785

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	-0.00031	-0.00032	-0.00006
	OE	0.00000	0.00000	0.00000
	OE	0.00169	0.00137	0.00570
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00018	-0.00019	0.00005
	OE	0.00000	0.00000	0.00000
	OE	0.00119	0.00100	0.00741

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)	-0.00129	-0.00130	-0.00129
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00117	-0.00120	-0.00118
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00093	-0.00093	-0.00093
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00085	-0.00085	-0.00085

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)	0.00129	0.00130	0.00129
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00120	0.00121	0.00119
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00093	0.00093	0.00093
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00087	0.00088	0.00086

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)	0.00099	0.00067	0.00505
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00088	0.00057	0.00493
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00071	0.00052	0.00700
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00061	0.00043	0.00688

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)	0.00325	0.00305	0.00760
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00330	0.00313	0.00767
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00252	0.00261	0.00932
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00253	0.00265	0.00937

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00289	0.00426	0.44446
sky130_osu_sc_12T_hs__tnbufi_l	0.00216	0.00327	0.30885

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.01070	0.01354
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.12687	0.15238

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)	0.06344	0.98598	11.58390
	OE->Y (RR)	0.02590	0.27819	4.44530
	OE->Y (FR)	0.07423	1.00538	11.55710
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.07122	1.02244	10.78580
	OE->Y (RR)	0.02763	0.27796	4.44508
	OE->Y (FR)	0.07963	1.05753	10.99240

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)	0.02964	0.51301	6.31622
	OE->Y (RF)	0.02552	0.27819	4.44531
	OE->Y (FF)	0.06430	0.52463	4.33145
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.03116	0.52329	5.97240
	OE->Y (RF)	0.02713	0.27796	4.44508
	OE->Y (FF)	0.06979	0.51799	3.81725

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	0.00280	0.00274	0.00331
	OE	0.00000	0.00000	0.00000
	OE	0.00657	0.00660	0.01142
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00213	0.00212	0.00336
	OE	0.00000	0.00000	0.00000
	OE	0.00508	0.00524	0.01226

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	-0.00045	-0.00046	-0.00019
	OE	0.00000	0.00000	0.00000
	OE	0.00579	0.00582	0.01026
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00033	-0.00032	-0.00008
	OE	0.00000	0.00000	0.00000
	OE	0.00447	0.00470	0.01128

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)	-0.00106	-0.00107	-0.00106
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00095	-0.00096	-0.00096
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00073	-0.00073	-0.00073
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00066	-0.00066	-0.00065

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)	0.00106	0.00107	0.00106
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00098	0.00099	0.00096
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00073	0.00073	0.00073
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00068	0.00068	0.00066

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)	-0.00159	-0.00210	0.00241
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00159	-0.00207	0.00241
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00106	-0.00142	0.00513
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00111	-0.00140	0.00513

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)	0.00497	0.00500	0.00981
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00490	0.00495	0.00975
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00389	0.00411	0.01102
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00383	0.00409	0.01098

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00580	0.00491	0.45879

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.02431	0.03522

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	0.12479	0.88594	7.16529
	A->Y (FR)	!B	0.08317	1.01064	11.72370
	B->Y (RR)	A	0.10200	0.86314	7.12939
	B->Y (FR)	!A	0.10031	1.03337	11.69340

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	0.10464	0.60971	4.69400
	A->Y (RF)	!B	0.04155	0.50000	5.92848
	B->Y (FF)	A	0.09459	0.59923	4.68636
	B->Y (RF)	!A	0.04860	0.51006	5.93924

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	0.00273	0.00232	0.00611
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00675	0.00654	0.01170
	B	A	0.00000	0.00000	0.00000
	B	A	0.00129	0.00108	0.00526
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00705	0.00691	0.01164

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	0.00809	0.00777	0.01213
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00191	0.00154	0.00588
	B	A	0.00000	0.00000	0.00000
	B	A	0.00727	0.00727	0.01180
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00253	0.00211	0.00646

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.00581	0.00496	0.42959

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.02431	0.03310

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	0.13022	0.88860	7.05110
	A->Y (FR)	B	0.10441	1.04059	11.59400
	B->Y (RR)	!A	0.10773	0.87616	7.04431
	B->Y (FR)	A	0.11229	1.05013	11.59720

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	0.10370	0.59898	4.50264
	A->Y (RF)	B	0.04112	0.52564	6.21882
	B->Y (FF)	!A	0.09821	0.59532	4.51994
	B->Y (RF)	A	0.04664	0.49990	5.71938

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	0.00785	0.00765	0.01233
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00172	0.00103	0.00504
	B	A	0.00000	0.00000	0.00000
	B	A	0.00790	0.00777	0.01245
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00124	0.00098	0.00512

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	0.00165	0.00114	0.00548
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00845	0.00834	0.01254
	B	A	0.00000	0.00000	0.00000
	B	A	0.00166	0.00120	0.00548
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00736	0.00738	0.01187

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P50_25C.ccs
Cell Library: Process , Voltage 1.50,
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	0.22358
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	84580.80000	169162.00000
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
	-0.00130	0.01561	0.25638

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
	1.47292	1.40359	0.32229