sky130_osu_sc_12T_hs_tt_1P80_150C.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_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.01155	0.01153	0.00885	1.44543	0.63964	1.29398
sky130_osu_sc_12T_hs__addf_l	0.01155	0.01153	0.00886	0.98855	0.64169	1.29045

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	91.00610	105.61700
sky130_osu_sc_12T_hs__addf_l	0.00000	124.08800	172.12400

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)	0.13368	1.50556	23.31610
	B->CO (RR)	0.13459	1.50965	23.31210
	CI->CO (RR)	0.12544	1.55308	24.20200
	CON->CO (FR)	0.02078	0.61203	9.93421
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.13438	1.39626	18.76550
	B->CO (RR)	0.13539	1.40904	19.03200
	CI->CO (RR)	0.12613	1.44445	19.67770
	CON->CO (FR)	0.02466	0.66283	9.75201

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)	0.17678	1.85371	28.50830
	B->CO (FF)	0.15862	1.77633	27.40380
	CI->CO (FF)	0.15510	1.87155	29.19420
	CON->CO (RF)	0.02042	0.54338	8.79345
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.17281	1.64500	21.88110
	B->CO (FF)	0.15245	1.57366	21.27170
	CI->CO (FF)	0.15108	1.66416	22.58540
	CON->CO (RF)	0.02183	0.55260	8.15550

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)	0.13725	0.78090	8.68796
	B->CON (FR)	0.11727	0.75166	8.80467
	CI->CON (FR)	0.11558	0.80242	9.43333
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.13026	0.77520	8.70111
	B->CON (FR)	0.11107	0.74372	8.81643
	CI->CON (FR)	0.10857	0.79674	9.44651

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)	0.09335	0.54856	6.18244
	B->CON (RF)	0.09463	0.58657	6.83879
	CI->CON (RF)	0.08512	0.59665	7.12235
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.09016	0.54644	6.19315
	B->CON (RF)	0.09154	0.58425	6.84932
	CI->CON (RF)	0.08192	0.59441	7.13331

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)	0.26077	1.69539	22.60310
	B->S (-R)	0.27443	1.68602	21.84820
	CI->S (-R)	0.23714	1.71102	23.28970
	CON->S (RR)	0.07326	0.57375	7.00096
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.25160	1.68585	22.54140
	B->S (-R)	0.26506	1.67755	21.78820
	CI->S (-R)	0.22794	1.70197	23.23290
	CON->S (RR)	0.07327	0.57308	6.98275

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)	0.22572	1.35687	17.15880
	B->S (-F)	0.22173	1.32663	17.12520
	CI->S (-F)	0.21818	1.40277	18.06240
	CON->S (FF)	0.09045	0.57561	6.43316
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.22023	1.35122	17.11510
	B->S (-F)	0.21649	1.32147	17.08380
	CI->S (-F)	0.21262	1.39716	18.01890
	CON->S (FF)	0.09049	0.57505	6.41825

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	0.00415	0.00655	0.05428
	B	0.00541	0.00751	0.05116
	CI	0.00554	0.00804	0.05521
sky130_osu_sc_12T_hs__addf_l	A	0.00368	0.00553	0.03998
	B	0.00496	0.00654	0.03912
	CI	0.00506	0.00703	0.04130

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01143	0.01581	0.09834
	B	0.01168	0.01538	0.08940
	CI	0.00994	0.01449	0.09755
sky130_osu_sc_12T_hs__addf_l	A	0.01159	0.01469	0.06873
	B	0.01188	0.01446	0.06295
	CI	0.01011	0.01339	0.06783

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01091	0.01350	0.05559
	B	0.01123	0.01344	0.05154
	CI	0.00943	0.01224	0.05492
sky130_osu_sc_12T_hs__addf_l	A	0.01120	0.01355	0.05260
	B	0.01149	0.01348	0.04879
	CI	0.00975	0.01229	0.05199

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00353	0.00505	0.03348
	B	0.00480	0.00610	0.03399
	CI	0.00492	0.00654	0.03522
sky130_osu_sc_12T_hs__addf_l	A	0.00320	0.00466	0.03243
	B	0.00447	0.00573	0.03303
	CI	0.00458	0.00616	0.03418

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00287	0.00277	0.07818
	B	0.00501	0.00509	0.07288
	CI	0.00627	0.00779	0.07667
sky130_osu_sc_12T_hs__addf_l	A	0.00286	0.00276	0.07815
	B	0.00500	0.00508	0.07287
	CI	0.00625	0.00777	0.07663

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.02325	0.02512	0.09446
	B	0.02091	0.02266	0.08678
	CI	0.01797	0.02004	0.08370
sky130_osu_sc_12T_hs__addf_l	A	0.02322	0.02511	0.09445
	B	0.02236	0.02406	0.08819
	CI	0.01796	0.02003	0.08370

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00574	0.00607	1.39715	1.44320	1.46811
sky130_osu_sc_12T_hs__addh_l	0.00562	0.00598	0.98003	1.44090	1.01830

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	99.65460	103.48900
sky130_osu_sc_12T_hs__addh_l	0.00000	167.26700	171.12600

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)	0.10490	0.64674	7.63846
	B->CO (RR)	0.10873	0.62773	7.63432
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.08920	0.63471	7.11571
	B->CO (RR)	0.09221	0.61764	7.05082

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)	0.08062	0.59463	7.07992
	B->CO (FF)	0.08552	0.61242	7.25398
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.07217	0.54806	5.98849
	B->CO (FF)	0.07645	0.56513	6.20329

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)	0.14460	0.66684	7.65673
	B->CON (RR)	0.14722	0.64650	7.66400
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.11559	0.59365	7.14474
	B->CON (RR)	0.11749	0.57511	7.10686

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)	0.11687	0.62599	7.28666
	B->CON (FF)	0.11338	0.63606	7.43414
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.09688	0.55246	6.63902
	B->CON (FF)	0.09431	0.56222	6.81922

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)	0.15338	1.28578	18.00860
	B->S (FR)	0.14944	1.29708	18.22180
	CON->S (FR)	0.02262	0.62315	10.14810
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.13436	1.12980	13.93490
	B->S (FR)	0.13130	1.13923	14.13590
	CON->S (FR)	0.02536	0.67413	9.99033

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)	0.18515	1.36721	19.05150
	B->S (RF)	0.18778	1.34731	19.04660
	CON->S (RF)	0.02327	0.62743	10.23700
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.14941	1.09415	13.27020
	B->S (RF)	0.15134	1.07500	13.21360
	CON->S (RF)	0.02137	0.55984	8.33193

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	0.00593	0.00670	0.02920
	B	0.00000	0.00000	0.00000
	B	0.00543	0.00607	0.03318
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00580	0.00686	0.03549
	B	0.00000	0.00000	0.00000
	B	0.00528	0.00633	0.04027

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	0.00767	0.00859	0.03546
	B	0.00000	0.00000	0.00000
	B	0.00812	0.00945	0.03821
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00733	0.00858	0.04008
	B	0.00000	0.00000	0.00000
	B	0.00776	0.00940	0.04416

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	0.00594	0.00671	0.02926
	B	0.00000	0.00000	0.00000
	B	0.00545	0.00609	0.03326
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00580	0.00689	0.03621
	B	0.00000	0.00000	0.00000
	B	0.00529	0.00636	0.04100

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	0.00768	0.00861	0.03554
	B	0.00000	0.00000	0.00000
	B	0.00813	0.00946	0.03829
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00743	0.00870	0.04167
	B	0.00000	0.00000	0.00000
	B	0.00786	0.00954	0.04525

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	0.00796	0.00889	0.03611
	B	0.00000	0.00000	0.00000
	B	0.00845	0.00980	0.03906
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00789	0.00914	0.04153
	B	0.00000	0.00000	0.00000
	B	0.00836	0.00999	0.04493

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	0.00621	0.00699	0.02956
	B	0.00000	0.00000	0.00000
	B	0.00570	0.00636	0.03408
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00579	0.00687	0.03557
	B	0.00000	0.00000	0.00000
	B	0.00528	0.00633	0.04038

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)	1.68208	1.61673	0.62138
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.69459	1.62874	0.62511

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)	1.68215	1.61922	0.67677
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.69470	1.63123	0.68024

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00303	0.00315	1.42105
sky130_osu_sc_12T_hs__and2_2	0.00303	0.00315	2.77076
sky130_osu_sc_12T_hs__and2_4	0.00303	0.00316	5.33632
sky130_osu_sc_12T_hs__and2_6	0.00306	0.00315	7.89175
sky130_osu_sc_12T_hs__and2_8	0.00303	0.00316	10.31872
sky130_osu_sc_12T_hs__and2_l	0.00231	0.00240	0.98324

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	43.69890	69.47990
sky130_osu_sc_12T_hs__and2_2	0.00000	69.52590	70.35930
sky130_osu_sc_12T_hs__and2_4	0.00000	121.37500	138.00200
sky130_osu_sc_12T_hs__and2_6	0.00000	173.22400	206.51100
sky130_osu_sc_12T_hs__and2_8	0.00000	225.07000	275.01500
sky130_osu_sc_12T_hs__and2_l	0.00000	126.57800	202.13900

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)	0.06819	0.54244	7.20967
	B->Y (RR)	0.07276	0.52415	6.86124
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.07675	0.48402	7.14340
	B->Y (RR)	0.08136	0.46154	6.77733
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.10580	0.48711	7.24916
	B->Y (RR)	0.11042	0.45934	6.86671
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.13694	0.51761	7.37758
	B->Y (RR)	0.14145	0.48550	6.99453
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.16719	0.55224	7.49873
	B->Y (RR)	0.17185	0.51658	7.10010
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.07131	0.59972	7.23509
	B->Y (RR)	0.07595	0.57975	6.88256

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)**	0.05912	0.49033	6.18758
	B->Y (FF)	0.06034	0.49930	6.31409
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.06642	0.44710	6.17131
	B->Y (FF)	0.06732	0.45328	6.30716
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.09274	0.45881	6.28669
	B->Y (FF)	0.09173	0.46031	6.41225
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.12144	0.49276	6.41386
	B->Y (FF)	0.11834	0.49069	6.53306
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.14876	0.52416	6.46633
	B->Y (FF)	0.14396	0.52060	6.57071
sky130_osu_sc_12T_hs__and2_l	**A->Y (FF)**	0.05952	0.49444	5.58244
	B->Y (FF)	0.06387	0.51079	5.76446

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	0.00509	0.00881	0.09976
	B	0.00000	0.00000	0.00000
	B	0.00510	0.00795	0.08272
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00839	0.01185	0.10279
	B	0.00000	0.00000	0.00000
	B	0.00842	0.01103	0.08509
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01694	0.01929	0.10950
	B	0.00000	0.00000	0.00000
	B	0.01696	0.01845	0.09124
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.02806	0.02779	0.11713
	B	0.00000	0.00000	0.00000
	B	0.02813	0.02677	0.09818
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.04121	0.03695	0.12579
	B	0.00000	0.00000	0.00000
	B	0.04131	0.03546	0.10564
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00789	0.01144	0.09412
	B	0.00000	0.00000	0.00000
	B	0.00788	0.01065	0.08393

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	0.00907	0.01374	0.09672
	B	0.00000	0.00000	0.00000
	B	0.01017	0.01466	0.09806
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01241	0.01678	0.09959
	B	0.00000	0.00000	0.00000
	B	0.01350	0.01764	0.10106
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02184	0.02464	0.10632
	B	0.00000	0.00000	0.00000
	B	0.02270	0.02532	0.10761
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03328	0.03343	0.11393
	B	0.00000	0.00000	0.00000
	B	0.03377	0.03363	0.11465
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.04700	0.04262	0.12156
	B	0.00000	0.00000	0.00000
	B	0.04712	0.04241	0.12158
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00833	0.01267	0.09058
	B	0.00000	0.00000	0.00000
	B	0.00919	0.01342	0.09187

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)	-0.00263	-0.00266	-0.00267
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00233	-0.00236	-0.00237
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00174	-0.00176	-0.00178
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00117	-0.00120	-0.00121
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00055	-0.00057	-0.00059
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00117	-0.00119	-0.00121

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)	0.00327	0.00331	0.00328
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00358	0.00361	0.00358
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00417	0.00420	0.00418
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00479	0.00482	0.00481
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00537	0.00539	0.00538
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00296	0.00299	0.00297

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)	-0.00251	-0.00252	-0.00251
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00221	-0.00223	-0.00222
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00161	-0.00163	-0.00162
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00102	-0.00104	-0.00103
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00042	-0.00044	-0.00043
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00109	-0.00110	-0.00109

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)	0.00328	0.00318	0.00314
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00358	0.00346	0.00344
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00418	0.00408	0.00404
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00477	0.00468	0.00463
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00537	0.00528	0.00523
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00297	0.00290	0.00287

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00281	0.00296	0.00295	0.59305

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	19.71570	43.78540

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)	0.07017	0.71303	8.40607
	A1->Y (FR)	0.05641	0.65417	7.90623
	B0->Y (FR)	0.05229	0.74706	9.28049

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)	0.04870	0.48222	5.70740
	A1->Y (RF)	0.04517	0.52363	6.46729
	B0->Y (RF)	0.02609	0.46626	5.96508

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	0.00729	0.00797	0.03361
	A1	0.00000	0.00000	0.00000
	A1	0.00612	0.00680	0.03175
	B0	0.00436	0.00593	0.03458

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	0.00245	0.00303	0.02515
	A1	0.00000	0.00000	0.00000
	A1	0.00254	0.00333	0.02548
	B0	-0.00000	0.00120	0.02386

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)	-0.00171	-0.00225	-0.00218
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00219	-0.00220	-0.00219
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00247	-0.00248	-0.00247

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)	0.00280	0.00281	0.00277
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00279	0.00280	0.00279
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00265	0.00256	0.00251

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)	-0.00170	-0.00224	-0.00218
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00219	-0.00221	-0.00219
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00270	-0.00270	-0.00273

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)	0.00281	0.00282	0.00278
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00279	0.00281	0.00280
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00274	0.00280	0.00275

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)	-0.00095	-0.00098	-0.00094

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)	0.00155	0.00155	0.00137

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00281	0.00296	0.00309	0.00291	0.57656

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi22_l	0.00000	22.42290	68.40200

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)	0.08854	0.72942	8.30415
	A1->Y (FR)	0.07955	0.71637	8.24347
	B0->Y (FR)	0.05461	0.74281	9.13929
	B1->Y (FR)	0.06395	0.75408	9.21124

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)	0.06421	0.49463	5.62349
	A1->Y (RF)	0.06057	0.53487	6.37810
	B0->Y (RF)	0.03187	0.50377	6.33670
	B1->Y (RF)	0.03629	0.46189	5.58115

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	0.00895	0.00936	0.03604
	A1	0.00778	0.00835	0.03409
	B0	0.00471	0.00633	0.03617
	B1	0.00592	0.00737	0.03737

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00416	0.00474	0.02819
	A1	0.00424	0.00517	0.02818
	B0	0.00091	0.00203	0.02429
	B1	0.00090	0.00178	0.02391

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)	-0.00147	-0.00210	-0.00190
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00189	-0.00191	-0.00189
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00246	-0.00249	-0.00247
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00247	-0.00248	-0.00247

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)	0.00311	0.00309	0.00303
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00309	0.00310	0.00309
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00266	0.00256	0.00251
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00266	0.00256	0.00251

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)	-0.00146	-0.00209	-0.00191
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00189	-0.00190	-0.00190
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00269	-0.00269	-0.00272
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00269	-0.00269	-0.00272

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)	0.00311	0.00312	0.00303
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00309	0.00310	0.00309
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00273	0.00277	0.00275
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00273	0.00277	0.00275

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)	-0.00095	-0.00097	-0.00093
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00056	-0.00057	-0.00058
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00279	-0.00282	-0.00284
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00280	-0.00282	-0.00284

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)	0.00159	0.00159	0.00136
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00133	0.00135	0.00132
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00285	0.00285	0.00286
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00285	0.00286	0.00286

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)	-0.00097	-0.00099	-0.00095
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00057	-0.00057	-0.00060
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00259	-0.00261	-0.00260
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00259	-0.00261	-0.00260

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)	0.00160	0.00160	0.00138
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00135	0.00136	0.00134
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00277	0.00268	0.00264
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00277	0.00268	0.00264

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

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	0.00315	1.32679
sky130_osu_sc_12T_hs__buf_2	0.00315	2.68602
sky130_osu_sc_12T_hs__buf_4	0.00315	5.35362
sky130_osu_sc_12T_hs__buf_6	0.00083	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00316	10.48034
sky130_osu_sc_12T_hs__buf_l	0.00236	0.98750

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	35.35000	35.35300
sky130_osu_sc_12T_hs__buf_2	0.00000	52.86260	69.50010
sky130_osu_sc_12T_hs__buf_4	0.00000	88.05100	138.02100
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	158.42600	275.06100
sky130_osu_sc_12T_hs__buf_l	0.00000	101.52500	101.53800

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)**	0.05253	0.50639	6.60991
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.05616	0.43116	6.50016
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.07478	0.42189	6.69345
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.11437	0.46374	6.92336
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.05415	0.55197	6.70645

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)**	0.05519	0.47481	5.99731
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.06279	0.44140	6.20961
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.08888	0.45728	6.49684
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.14418	0.52311	6.73183
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.05761	0.49956	5.83494

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	0.00397	0.00733	0.07580
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00701	0.01042	0.07927
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01444	0.01812	0.08676
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03329	0.03450	0.10214
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00505	0.00871	0.08808

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	0.00866	0.01329	0.09750
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01192	0.01627	0.10027
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.02118	0.02393	0.10670
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.04615	0.04149	0.12033
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00822	0.01285	0.09598

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
	-0.00070	-0.00069	-0.00066

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
	0.00070	0.00069	0.00066

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00293	0.00289	0.00889	1.39491	1.39954
sky130_osu_sc_12T_hs__dffr_l	0.00293	0.00289	0.00888	0.98682	0.99541

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	168.52200	260.24300
sky130_osu_sc_12T_hs__dffr_l	0.00000	234.69900	326.42500

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)	0.25546	1.23478	15.02370
	QN->Q (FR)	0.02406	0.68280	10.99430
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.25218	1.29703	14.17280
	QN->Q (FR)	0.02665	0.71204	10.45980

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)	0.26318	1.25166	15.53300
	QN->Q (RF)	0.02184	0.58032	9.32283
	RN->Q (FF)	0.19510	1.23534	16.25060
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.26618	1.35256	15.07890
	QN->Q (RF)	0.02285	0.58746	8.67975
	RN->Q (FF)	0.19840	1.33655	15.79240

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)	0.23458	0.69764	6.66585
	RN->QN (FR)	0.16636	0.68243	7.38438
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.23444	0.75243	6.70106
	RN->QN (FR)	0.16651	0.73649	7.41161

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)**	0.22242	0.64789	5.62396
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.21564	0.65184	5.15018

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)	-0.06389	-0.06123	0.16707
	setup	CK (R)	0.19697	0.21830	1.36940
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.06485	-0.06379	0.16445
	setup	CK (R)	0.19531	0.22057	1.41475

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)	-0.10482	-0.22950	-1.14191
	setup	CK (R)	0.12390	0.23968	3.20974
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10345	-0.22829	-1.14136
	setup	CK (R)	0.12384	0.23968	3.20974

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)	-0.06389	-0.06123	0.16707
	setup	CK (R)	0.19697	0.21830	1.36940
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.06485	-0.06379	0.16445
	setup	CK (R)	0.19531	0.22057	1.41475

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)	-0.10482	-0.22950	-1.14191
	setup	CK (R)	0.12390	0.23968	3.20974
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.10345	-0.22829	-1.14136
	setup	CK (R)	0.12384	0.23968	3.20974

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)	0.16623	0.20025	1.57491
	removal	CK (R)	-0.03782	-0.04529	-0.06620
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.16689	0.20126	1.38439
	removal	CK (R)	-0.03782	-0.04529	-0.06220

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)	0.16623	0.20025	1.57491
	removal	CK (R)	-0.03782	-0.04529	-0.06620
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.16689	0.20126	1.38439
	removal	CK (R)	-0.03782	-0.04529	-0.06220

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 ()	0.11536	0.42114	13.33370
	min_pulse_width	RN ()	0.11854	0.42114	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.11536	0.42114	13.33370
	min_pulse_width	RN ()	0.11536	0.42114	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 ()	0.12491	0.42114	13.33370
	min_pulse_width	CK ()	0.13765	0.42114	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.11854	0.42114	13.33370
	min_pulse_width	CK ()	0.13447	0.42114	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 ()	0.25232	0.42114	13.33370
	min_pulse_width	CK ()	0.10261	0.42114	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.25232	0.42114	13.33370
	min_pulse_width	CK ()	0.10261	0.42114	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	0.01118	0.01365	0.07024
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01127	0.01421	0.07970

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	0.01357	0.01430	0.04963
	RN	-0.00100	-0.06778	-1.12984
	RN	0.02300	0.02416	0.06064
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01350	0.01484	0.06214
	RN	-0.00100	-0.05507	-0.79925
	RN	0.02308	0.02486	0.07340

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	0.01308	0.01380	0.04902
	RN	-0.00100	-0.06792	-1.13349
	RN	0.02285	0.02399	0.06049
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01313	0.01446	0.06150
	RN	-0.00100	-0.05536	-0.80619
	RN	0.02290	0.02467	0.07300

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	0.01028	0.01274	0.06905
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00994	0.01287	0.07824

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	-0.00044	-0.00093	-0.00084
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01201	0.01445	0.09824
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00604	0.00848	0.08747
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00014	-0.00036	-0.00027
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01259	0.01503	0.09877
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00662	0.00906	0.08804

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	0.00417	0.00420	0.00414
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01780	0.02064	0.10418
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00856	0.01134	0.09186
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00475	0.00478	0.00471
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01838	0.02122	0.10476
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00914	0.01191	0.09243

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)	0.00542	0.00935	0.11142
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01143	0.01550	0.12378
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)	0.00600	0.00993	0.11199
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01201	0.01608	0.12436

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)	0.00906	0.01390	0.11732
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01842	0.02306	0.13064
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)	0.00964	0.01447	0.11790
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01901	0.02365	0.13140

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)	0.00072	0.00449	0.10863
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00628	0.00989	0.12052
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00150	0.00535	0.10925
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00130	0.00506	0.10920
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00686	0.01046	0.12110
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00208	0.00592	0.10983

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)	0.01321	0.01815	0.12277
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02765	0.03202	0.16268
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02113	0.02557	0.13456
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02658	0.03544	0.20133
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01548	0.02014	0.12433
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01378	0.01873	0.12335
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.02823	0.03261	0.16326
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02170	0.02615	0.13514
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.02716	0.03602	0.20191
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01605	0.02061	0.12491

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00289	0.00290	0.00672	0.00898	1.46983	1.46761
sky130_osu_sc_12T_hs__dffsr_l	0.00289	0.00290	0.00672	0.00898	0.98327	0.99649

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	142.21800	194.63600
sky130_osu_sc_12T_hs__dffsr_l	0.00000	208.39400	260.81900

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)	0.27144	1.26722	15.58370
	QN->Q (FR)	0.02262	0.66154	10.80160
	RN->Q (RR)	0.21998	1.22632	15.65250
	SN->Q (FR)	0.19784	1.23050	16.27940
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.27193	1.31844	14.15880
	QN->Q (FR)	0.02659	0.71082	10.43290
	RN->Q (RR)	0.22063	1.27835	14.21130
	SN->Q (FR)	0.19839	1.28126	14.83470

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)	0.30914	1.31817	16.11320
	QN->Q (RF)	0.02167	0.59107	9.63013
	RN->Q (FF)	0.19861	1.25828	16.82810
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.31366	1.40503	15.07920
	QN->Q (RF)	0.02272	0.58605	8.65300
	RN->Q (FF)	0.20335	1.34578	15.78560

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)	0.27990	0.74936	6.78548
	RN->QN (FR)	0.17005	0.68943	7.49657
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.28126	0.80776	6.76530
	RN->QN (FR)	0.17806	0.75540	7.46971

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)	0.23949	0.67686	5.91299
	RN->QN (RF)	0.18885	0.63751	5.97979
	SN->QN (FF)	0.16622	0.64044	6.59906
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.23566	0.67548	5.18471
	RN->QN (RF)	0.18520	0.63644	5.24892
	SN->QN (FF)	0.16253	0.63822	5.86786

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)	-0.07255	-0.07000	0.13623
	setup	CK (R)	0.20737	0.22850	1.24430
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.07291	-0.07097	0.13698
	setup	CK (R)	0.20739	0.22825	1.17347

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)	-0.12197	-0.24616	-1.28257
	setup	CK (R)	0.14997	0.25665	3.24600
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12002	-0.24367	-1.25981
	setup	CK (R)	0.14980	0.25665	3.24600

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)	-0.07255	-0.07000	0.13623
	setup	CK (R)	0.20737	0.22850	1.24430
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.07291	-0.07097	0.13698
	setup	CK (R)	0.20739	0.22825	1.17347

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)	-0.12197	-0.24616	-1.28257
	setup	CK (R)	0.14997	0.25665	3.24600
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12002	-0.24367	-1.25981
	setup	CK (R)	0.14980	0.25665	3.24600

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)	0.15418	0.18650	1.26603
	removal	CK (R)	-0.02921	-0.03134	-0.03384
	hold	SN (R)	-0.15727	-0.26756	-0.96414
	setup	SN (R)	0.18554	0.30023	4.87214
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.15430	0.18634	1.29106
	removal	CK (R)	-0.02921	-0.03134	-0.03384
	hold	SN (R)	-0.15318	-0.25977	-0.93999
	setup	SN (R)	0.18371	0.29366	4.81480

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)	0.15418	0.18650	1.26603
	removal	CK (R)	-0.02921	-0.03134	-0.03384
	hold	SN (R)	-0.15927	-0.26756	-0.96414
	hold	SN (R)	-0.15727	-0.26957	-0.96505
	setup	SN (R)	0.18322	0.30023	4.60304
	setup	SN (R)	0.18554	0.29978	4.87214
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.15430	0.18634	1.29106
	removal	CK (R)	-0.02921	-0.03134	-0.03384
	hold	SN (R)	-0.15412	-0.25977	-0.95483
	hold	SN (R)	-0.15318	-0.26154	-0.93999
	setup	SN (R)	0.18371	0.29173	4.51220
	setup	SN (R)	0.17777	0.29366	4.81480

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 ()	0.13447	0.42114	13.33370
	min_pulse_width	RN ()	0.14084	0.42114	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.13447	0.42114	13.33370
	min_pulse_width	RN ()	0.13447	0.42114	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)	0.04166	0.06697	4.47686
	removal	CK (R)	-0.02290	-0.04848	-0.29028
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04146	0.06697	4.31322
	removal	CK (R)	-0.02290	-0.04848	-0.29028

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)	0.04166	0.06697	4.47686
	removal	CK (R)	-0.02290	-0.04848	-0.29028
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.04146	0.06697	4.31322
	removal	CK (R)	-0.02290	-0.04848	-0.29028

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 ()	0.15676	0.42114	13.33370
	min_pulse_width	SN ()	0.16314	0.42114	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.15676	0.42114	13.33370
	min_pulse_width	SN ()	0.15358	0.42114	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 ()	0.12810	0.42114	13.33370
	min_pulse_width	CK ()	0.15676	0.42114	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.12491	0.42114	13.33370
	min_pulse_width	CK ()	0.15358	0.42114	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 ()	0.26188	0.42114	13.33370
	min_pulse_width	CK ()	0.13128	0.42114	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.26188	0.42114	13.33370
	min_pulse_width	CK ()	0.13128	0.42114	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	0.01333	0.01559	0.06951
	RN	0.02193	0.02294	0.06401
	SN	-0.00100	-0.06994	-1.19054
	SN	0.02035	0.02113	0.06940
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01343	0.01619	0.08133
	RN	0.02203	0.02354	0.07419
	SN	-0.00100	-0.05495	-0.79638
	SN	0.02050	0.02180	0.08025

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	0.01431	0.01544	0.05773
	RN	-0.00100	-0.06994	-1.19053
	RN	0.02465	0.02627	0.07199
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01418	0.01551	0.06324
	RN	-0.00100	-0.05495	-0.79638
	RN	0.02459	0.02641	0.07679

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	0.01386	0.01500	0.05774
	RN	-0.00100	-0.06988	-1.18855
	RN	0.02431	0.02592	0.07090
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01390	0.01523	0.06264
	RN	-0.00100	-0.05539	-0.80706
	RN	0.02436	0.02618	0.07647

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	0.01244	0.01473	0.07007
	RN	0.02103	0.02205	0.06280
	SN	-0.00100	-0.06988	-1.18861
	SN	0.01977	0.02056	0.06906
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01209	0.01487	0.07961
	RN	0.02068	0.02218	0.07259
	SN	-0.00100	-0.05539	-0.80702
	SN	0.01950	0.02080	0.07908

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	-0.00083	-0.00084	-0.00082
	(!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)	0.01480	0.01712	0.10033
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00598	0.00837	0.08750
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00596	0.00834	0.08737
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00619	0.00859	0.08765
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00025	-0.00027	-0.00024
	(!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)	0.01538	0.01770	0.10091
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00656	0.00895	0.08808
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00654	0.00892	0.08794
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00677	0.00917	0.08822

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	0.00436	0.00426	0.00422
	(!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)	0.02023	0.02284	0.10600
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00942	0.01208	0.09197
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00939	0.01199	0.09188
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00945	0.01212	0.09212
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00494	0.00484	0.00480
	(!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)	0.02081	0.02342	0.10657
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01000	0.01266	0.09255
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00997	0.01257	0.09246
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01003	0.01270	0.09269

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)	0.00408	0.00800	0.11033
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01263	0.01651	0.12422
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)	0.00466	0.00857	0.11091
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01321	0.01709	0.12480

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)	0.00955	0.01446	0.11775
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01863	0.02326	0.13102
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)	0.01012	0.01503	0.11832
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01921	0.02384	0.13139

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)	-0.00477	-0.00478	-0.00484
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00441	-0.00552	-0.00547
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00431	-0.00484	-0.00483
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00503	0.00716	0.08219
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)	-0.00420	-0.00421	-0.00427
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00384	-0.00495	-0.00489
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00373	-0.00427	-0.00425
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00561	0.00772	0.08276

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)	0.00760	0.00772	0.00763
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00799	0.00802	0.00793
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00771	0.00775	0.00769
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01527	0.01701	0.09255
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)	0.00818	0.00830	0.00821
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00857	0.00860	0.00850
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00829	0.00830	0.00826
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01585	0.01759	0.09313

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)	0.00066	0.00441	0.10854
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00725	0.01081	0.12099
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00734	0.01089	0.12111
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00110	0.00486	0.10876
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00472	0.01159	0.19580
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00124	0.00498	0.10912
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00782	0.01138	0.12157
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00791	0.01147	0.12169
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00168	0.00544	0.10934
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00529	0.01216	0.19637

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)	0.03031	0.03468	0.16446
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01344	0.01834	0.12298
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02102	0.02554	0.13470
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02123	0.02575	0.13497
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02912	0.03754	0.20445
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01495	0.01958	0.12377
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01757	0.02621	0.21146
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03088	0.03525	0.16504
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01402	0.01892	0.12356
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02160	0.02611	0.13527
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02180	0.02632	0.13555
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.02969	0.03812	0.20503
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01552	0.02016	0.12435
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01814	0.02678	0.21203

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00291	0.00553	0.00891	1.39377	1.40367
sky130_osu_sc_12T_hs__dffs_l	0.00291	0.00553	0.00891	0.99918	0.99897

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	229.87200	475.71300
sky130_osu_sc_12T_hs__dffs_l	0.00000	296.04200	541.89300

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)	0.20023	1.16429	14.88300
	QN->Q (FR)	0.02402	0.67996	10.94360
	SN->Q (FR)	0.14909	1.18175	15.67100
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.20052	1.24022	14.23330
	QN->Q (FR)	0.02661	0.71352	10.51490
	SN->Q (FR)	0.14985	1.25457	15.00640

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)	0.29288	1.28775	15.53590
	QN->Q (RF)	0.02176	0.57809	9.29334
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.29436	1.39397	15.28430
	QN->Q (RF)	0.02278	0.58869	8.72612

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)	0.26342	0.73570	6.70869
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.26172	0.78746	6.74937

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)	0.16950	0.58097	5.52960
	SN->QN (FF)	0.11806	0.59814	6.31227
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.16632	0.58997	5.06421
	SN->QN (FF)	0.11505	0.60399	5.83406

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)	-0.05145	-0.05027	0.17556
	setup	CK (R)	0.14899	0.17387	4.72281
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.04945	-0.05182	0.17731
	setup	CK (R)	0.14546	0.17337	5.19022

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)	-0.10797	-0.23074	1.24782
	setup	CK (R)	0.13877	0.24446	3.23315
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.10915	-0.22928	1.66158
	setup	CK (R)	0.13877	0.24446	3.23481

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)	-0.05145	-0.05027	0.17556
	setup	CK (R)	0.14899	0.17387	4.72281
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.04945	-0.05182	0.17731
	setup	CK (R)	0.14546	0.17337	5.19022

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)	-0.10797	-0.23074	1.24782
	setup	CK (R)	0.13877	0.24446	3.23315
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.10915	-0.22928	1.66158
	setup	CK (R)	0.13877	0.24446	3.23481

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)	0.03905	0.06637	3.37852
	removal	CK (R)	-0.02372	-0.05162	-0.40009
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03880	0.06627	3.28007
	removal	CK (R)	-0.02372	-0.05162	-0.40009

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)	0.03905	0.06637	3.37852
	removal	CK (R)	-0.02372	-0.05162	-0.40009
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03880	0.06627	3.28007
	removal	CK (R)	-0.02372	-0.05162	-0.40009

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 ()	0.10261	0.42114	13.33370
	min_pulse_width	SN ()	0.10580	0.42114	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.10261	0.42114	13.33370
	min_pulse_width	SN ()	0.09943	0.42114	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 ()	0.09306	0.42114	13.33370
	min_pulse_width	CK ()	0.14721	0.42114	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.08987	0.42114	13.33370
	min_pulse_width	CK ()	0.14402	0.42114	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 ()	0.20454	0.42114	13.33370
	min_pulse_width	CK ()	0.11854	0.42114	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.20454	0.42114	13.33370
	min_pulse_width	CK ()	0.11854	0.42114	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	0.01039	0.01302	0.06994
	SN	-0.00100	-0.06775	-1.12892
	SN	0.01616	0.01863	0.08002
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01057	0.01364	0.07924
	SN	-0.00100	-0.05548	-0.80926
	SN	0.01636	0.01929	0.08939

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	0.01678	0.01750	0.05365
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01663	0.01796	0.06565

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	0.01590	0.01661	0.05240
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01595	0.01728	0.06465

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	0.00970	0.01236	0.06893
	SN	-0.00100	-0.06804	-1.13683
	SN	0.01578	0.01823	0.07909
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00942	0.01251	0.07798
	SN	-0.00100	-0.05547	-0.80903
	SN	0.01555	0.01848	0.08821

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	0.00159	0.00158	0.00159
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01273	0.01549	0.10180
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00517	0.00763	0.08706
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00216	0.00215	0.00217
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01331	0.01606	0.10238
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00575	0.00821	0.08763

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	0.00684	0.00675	0.00670
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01980	0.02248	0.10590
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00851	0.01128	0.09148
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00742	0.00733	0.00728
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02037	0.02306	0.10648
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00909	0.01185	0.09205

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)	-0.00346	-0.00349	-0.00350
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00574	0.00800	0.08760
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)	-0.00288	-0.00291	-0.00292
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00632	0.00857	0.08818

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)	0.00574	0.00571	0.00567
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01055	0.01380	0.09617
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)	0.00632	0.00628	0.00624
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01112	0.01437	0.09674

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)	0.00041	0.00418	0.10839
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00352	0.00730	0.11128
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00397	0.01102	0.19575
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00098	0.00476	0.10897
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00410	0.00788	0.11186
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00455	0.01160	0.19632

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)	0.02813	0.03253	0.16478
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01290	0.01785	0.12254
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02707	0.03570	0.20139
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01728	0.02195	0.12620
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01640	0.02525	0.21095
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.02870	0.03310	0.16535
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01347	0.01843	0.12311
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.02765	0.03628	0.20197
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01785	0.02253	0.12678
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01698	0.02582	0.21153

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00306	0.00871	1.25557
sky130_osu_sc_12T_hs__dff_l	0.00306	0.00872	0.93252

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	123.96500	155.42700
sky130_osu_sc_12T_hs__dff_l	0.00000	190.12200	221.56700

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)**	0.17184	0.64051	6.39022
sky130_osu_sc_12T_hs__dff_l	**CK->Q (RR)**	0.17146	0.69635	6.51905

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)**	0.24688	0.63164	5.14753
sky130_osu_sc_12T_hs__dff_l	**CK->Q (RF)**	0.24767	0.65452	4.93431

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)	-0.04456	-0.04571	0.16691
	setup	CK (R)	0.12047	0.15251	3.98127
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.04462	-0.04571	0.16660
	setup	CK (R)	0.12265	0.15287	4.07654

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)	-0.09577	-0.23139	1.90325
	setup	CK (R)	0.11803	0.24209	3.24062
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.09542	-0.23138	1.93874
	setup	CK (R)	0.11803	0.24209	3.24057

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 ()	0.08032	0.42114	13.33370
	min_pulse_width	CK ()	0.13128	0.42114	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.07713	0.42114	13.33370
	min_pulse_width	CK ()	0.13128	0.42114	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 ()	0.17906	0.42114	13.33370
	min_pulse_width	CK ()	0.09306	0.42114	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.17906	0.42114	13.33370
	min_pulse_width	CK ()	0.09306	0.42114	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	0.02076	0.02772	0.17550
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02083	0.02774	0.17489

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	0.02231	0.02597	0.13684
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.02186	0.02554	0.13626

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	-0.00073	-0.00122	-0.00113
	!CK	0.00000	0.00000	0.00000
	!CK	0.01035	0.01294	0.09813
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00016	-0.00065	-0.00055
	!CK	0.00000	0.00000	0.00000
	!CK	0.01093	0.01352	0.09870

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	0.00386	0.00389	0.00382
	!CK	0.00000	0.00000	0.00000
	!CK	0.01748	0.02033	0.10527
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00443	0.00446	0.00440
	!CK	0.00000	0.00000	0.00000
	!CK	0.01806	0.02091	0.10585

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)	0.00038	0.00418	0.10839
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00061	0.00441	0.10839
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00095	0.00475	0.10896
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00119	0.00498	0.10896

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)	0.01287	0.01784	0.12252
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02577	0.03017	0.16187
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02604	0.03500	0.20386
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01428	0.01885	0.12323
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.01344	0.01840	0.12310
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.02635	0.03075	0.16244
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.02662	0.03558	0.20444
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.01486	0.01943	0.12381

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

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	0.00293	1.21885
sky130_osu_sc_12T_hs__inv_10	0.02631	12.14277
sky130_osu_sc_12T_hs__inv_2	0.00546	2.53015
sky130_osu_sc_12T_hs__inv_3	0.00808	3.71618
sky130_osu_sc_12T_hs__inv_4	0.01064	5.04419
sky130_osu_sc_12T_hs__inv_6	0.01593	7.51374
sky130_osu_sc_12T_hs__inv_8	0.02112	9.94594
sky130_osu_sc_12T_hs__inv_l	0.00231	0.84531

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	17.67350	34.36920
sky130_osu_sc_12T_hs__inv_10	0.00000	175.90300	342.53400
sky130_osu_sc_12T_hs__inv_2	0.00000	35.18210	68.50980
sky130_osu_sc_12T_hs__inv_3	0.00000	52.85470	102.87700
sky130_osu_sc_12T_hs__inv_4	0.00000	70.36330	137.01800
sky130_osu_sc_12T_hs__inv_6	0.00000	105.54400	205.52500
sky130_osu_sc_12T_hs__inv_8	0.00000	140.72400	274.03100
sky130_osu_sc_12T_hs__inv_l	0.00000	50.74240	100.90500

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)**	0.02319	0.60978	9.50552
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.02641	0.37400	9.46711
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.01727	0.51477	9.49745
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.01859	0.47577	9.51826
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.01833	0.44547	9.53354
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.02030	0.41013	9.53318
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.02311	0.38856	9.52606
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.02674	0.64896	9.16413

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)**	0.02047	0.50997	7.90081
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.02507	0.31098	8.14080
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01605	0.43568	8.11099
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01722	0.40355	8.18319
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01679	0.37716	8.23541
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01957	0.34603	8.25478
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.02222	0.32603	8.24705
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.02194	0.52105	7.39849

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	0.00409	0.00570	0.03169
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.03415	0.06306	0.30292
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00705	0.01168	0.06095
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01086	0.01755	0.09076
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.01382	0.02373	0.12018
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.02056	0.03610	0.17898
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.02728	0.04943	0.24016
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00322	0.00491	0.03275

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	0.00002	0.00129	0.02061
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00368	0.01661	0.19812
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00088	0.00269	0.03973
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00082	0.00416	0.05946
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00170	0.00527	0.07826
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00269	0.00870	0.11700
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00345	0.01304	0.15633
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	0.00158	0.00242	0.01732

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.08213	0.08202	0.00604	0.07793

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	35.50430	35.50430

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)	-	0.01050	0.08142	0.41702
	A1->Y (RR)	-	0.01197	0.08253	0.41703
	S0->Y (RR)	(!A0 * A1)	0.04000	0.16553	0.37251
	S0->Y (FR)	(A0 * !A1)	0.02550	0.20702	1.51272

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)	-	0.01189	0.09112	0.44405
	A1->Y (FF)	-	0.01071	0.08992	0.44319
	S0->Y (FF)	(!A0 * A1)	0.04936	0.21089	1.12077
	S0->Y (RF)	(A0 * !A1)	0.02246	0.16178	0.80192

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	-	-0.00402	-0.00401	-0.00402
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00181	-0.00182	-0.00181
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00505	0.01053	0.11409
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00245	0.00209	0.10488

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	-	0.00406	0.00407	0.00407
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00341	0.00341	0.00341
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00099	0.00587	0.10895
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01104	0.01610	0.11913

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)	-0.00063	-0.00063	-0.00063

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)	0.00122	0.00122	0.00122

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)	-0.00108	-0.00109	-0.00109

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)	0.00110	0.00110	0.00110

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)	-0.00071	0.00395	0.10691
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00067	0.00395	0.10708

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)	0.00846	0.01376	0.11681
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00766	0.01322	0.11653

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00292	0.00293	1.10659
sky130_osu_sc_12T_hs__nand2_l	0.00226	0.00230	0.84248

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	17.67310	68.50080
sky130_osu_sc_12T_hs__nand2_l	0.00000	50.70780	201.49500

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)	0.02417	0.59185	8.96354
	B->Y (FR)	0.02720	0.57031	8.58687
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.02693	0.64735	9.11977
	B->Y (FR)	0.03214	0.65114	9.11195

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)	0.03051	0.64409	9.65833
	B->Y (RF)	0.03448	0.60379	8.93326
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.03259	0.69261	9.63524
	B->Y (RF)	0.03659	0.65210	8.89600

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	0.00433	0.00596	0.02864
	B	0.00000	0.00000	0.00000
	B	0.00557	0.00718	0.03130
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00326	0.00466	0.02760
	B	0.00000	0.00000	0.00000
	B	0.00419	0.00555	0.02929

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	0.00139	0.00229	0.01876
	B	0.00000	0.00000	0.00000
	B	0.00136	0.00213	0.01959
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00529	0.00575	0.01637
	B	0.00000	0.00000	0.00000
	B	0.00519	0.00561	0.01685

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)	-0.00282	-0.00285	-0.00287
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00199	-0.00201	-0.00202

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)	0.00286	0.00290	0.00288
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00202	0.00205	0.00203

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)	-0.00265	-0.00266	-0.00265
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00188	-0.00188	-0.00188

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)	0.00281	0.00272	0.00268
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00200	0.00193	0.00190

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00288	0.00315	0.69755
sky130_osu_sc_12T_hs__nor2_l	0.00218	0.00239	0.49556

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	15.76490	34.33700
sky130_osu_sc_12T_hs__nor2_l	0.00000	39.80050	100.57200

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)	0.05069	0.69459	8.87878
	B->Y (FR)	0.03853	0.71483	9.46910
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.05394	0.74369	8.60809
	B->Y (FR)	0.04418	0.75836	9.10054

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)	0.02831	0.42708	5.55301
	B->Y (RF)	0.02195	0.41768	5.52930
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.02801	0.43938	5.27422
	B->Y (RF)	0.02313	0.43179	5.25106

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	0.00595	0.00685	0.03319
	B	0.00000	0.00000	0.00000
	B	0.00446	0.00576	0.03568
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00431	0.00519	0.03037
	B	0.00000	0.00000	0.00000
	B	0.00338	0.00473	0.03579

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	0.00113	0.00216	0.02679
	B	0.00000	0.00000	0.00000
	B	0.00003	0.00133	0.02445
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00136	0.00213	0.02240
	B	0.00000	0.00000	0.00000
	B	0.00133	0.00223	0.02083

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)	-0.00178	-0.00232	-0.00220
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00111	-0.00146	-0.00091

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)	0.00282	0.00285	0.00279
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00261	0.00260	0.00243

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)	-0.00098	-0.00101	-0.00097
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00068	-0.00069	-0.00064

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)	0.00129	0.00129	0.00119
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00127	0.00127	0.00103

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00293	0.00304	0.00253	0.66626

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	46.11610	135.16400

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)	0.05475	0.72102	9.20115
	A1->Y (FR)	0.06917	0.70193	8.61852
	B0->Y (FR)	0.03287	0.59696	7.94232

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)	0.04206	0.50692	6.29691
	A1->Y (RF)	0.05179	0.50645	6.19947
	B0->Y (RF)	0.03233	0.55169	7.23587

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	0.00636	0.00762	0.03366
	A1	0.00000	0.00000	0.00000
	A1	0.00788	0.00860	0.03279
	B0	0.00370	0.00568	0.04093

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	0.00299	0.00369	0.02275
	A1	0.00000	0.00000	0.00000
	A1	0.00398	0.00448	0.02485
	B0	0.00259	0.00350	0.02271

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)	-0.00012	-0.00013	-0.00010
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00255	-0.00256	-0.00255
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00256	-0.00256	-0.00255

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)	0.00216	0.00217	0.00207
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00256	0.00259	0.00257
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00270	0.00261	0.00258

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)	-0.00083	-0.00135	-0.00125
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00252	-0.00253	-0.00252
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00252	-0.00253	-0.00252

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)	0.00362	0.00364	0.00359
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00253	0.00255	0.00254
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00268	0.00257	0.00255

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)	-0.00206	-0.00208	-0.00213

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)	0.00214	0.00219	0.00215

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00278	0.00289	0.00305	0.00302	0.71166

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	23.55260	68.45060

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)	0.07219	0.70077	8.72094
	A1->Y (FR)	0.06076	0.72104	9.34698
	B0->Y (FR)	0.03993	0.70449	9.32782
	B1->Y (FR)	0.05251	0.68096	8.70199

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)	0.07079	0.55378	6.67256
	A1->Y (RF)	0.05700	0.53822	6.62016
	B0->Y (RF)	0.04851	0.58340	7.57736
	B1->Y (RF)	0.06293	0.60214	7.64766

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	0.01018	0.01088	0.03362
	A1	0.00789	0.00893	0.03684
	B0	0.00471	0.00619	0.03331
	B1	0.00632	0.00712	0.03056

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00162	0.00219	0.02341
	A1	0.00062	0.00138	0.02135
	B0	0.00061	0.00168	0.02241
	B1	0.00164	0.00245	0.02386

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)	-0.00173	-0.00224	-0.00212
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00156	-0.00207	-0.00195
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00245	-0.00245	-0.00244
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00244	-0.00245	-0.00244

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)	0.00280	0.00283	0.00277
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00297	0.00300	0.00293
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00247	0.00250	0.00248
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00264	0.00253	0.00249

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)	-0.00093	-0.00095	-0.00092
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00076	-0.00078	-0.00075
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00244	-0.00244	-0.00244
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00243	-0.00245	-0.00243

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)	0.00129	0.00129	0.00119
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00145	0.00146	0.00136
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00246	0.00249	0.00247
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00264	0.00254	0.00248

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)	-0.00094	-0.00094	-0.00093
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00077	-0.00078	-0.00076
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00283	-0.00284	-0.00283
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00273	-0.00275	-0.00283

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)	0.00130	0.00131	0.00121
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00146	0.00148	0.00137
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00291	0.00293	0.00288
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00284	0.00290	0.00286

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)	-0.00171	-0.00222	-0.00210
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00154	-0.00205	-0.00194
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00288	-0.00288	-0.00288
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00277	-0.00280	-0.00288

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)	0.00279	0.00282	0.00275
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00295	0.00299	0.00292
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00296	0.00299	0.00293
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00289	0.00293	0.00291

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00324	0.00301	1.30913
sky130_osu_sc_12T_hs__or2_2	0.00325	0.00301	2.67894
sky130_osu_sc_12T_hs__or2_4	0.00325	0.00301	5.30780
sky130_osu_sc_12T_hs__or2_8	0.00325	0.00301	10.44153
sky130_osu_sc_12T_hs__or2_l	0.00245	0.00230	0.91833

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	25.09730	36.23160
sky130_osu_sc_12T_hs__or2_2	0.00000	34.29270	70.38080
sky130_osu_sc_12T_hs__or2_4	0.00000	52.81540	138.90600
sky130_osu_sc_12T_hs__or2_8	0.00000	89.86010	275.95400
sky130_osu_sc_12T_hs__or2_l	0.00000	65.46960	102.02900

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)	0.06339	0.52917	6.42827
	B->Y (RR)	0.05375	0.50007	6.25871
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.06750	0.45481	6.40393
	B->Y (RR)	0.05762	0.42921	6.23660
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.08647	0.44238	6.58871
	B->Y (RR)	0.07626	0.42033	6.42106
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.12639	0.48198	6.88051
	B->Y (RR)	0.11571	0.46449	6.73144
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.06472	0.57608	6.33852
	B->Y (RR)	0.05668	0.55320	6.23045

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)	0.09799	0.52789	6.17821
	B->Y (FF)	0.08116	0.53314	6.45738
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.11522	0.50376	6.44494
	B->Y (FF)	0.09856	0.51425	6.72463
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.16357	0.53528	6.72176
	B->Y (FF)	0.14701	0.55411	7.00568
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.26441	0.63542	7.01444
	B->Y (FF)	0.24803	0.65978	7.30405
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.10319	0.54698	5.78503
	B->Y (FF)	0.08777	0.55009	6.03041

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	0.00518	0.00769	0.06431
	B	0.00000	0.00000	0.00000
	B	0.00423	0.00719	0.06738
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00834	0.01091	0.06817
	B	0.00000	0.00000	0.00000
	B	0.00729	0.01046	0.07110
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01598	0.01866	0.07633
	B	0.00000	0.00000	0.00000
	B	0.01476	0.01823	0.07900
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03528	0.03504	0.09332
	B	0.00000	0.00000	0.00000
	B	0.03366	0.03478	0.09367
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00484	0.00704	0.06038
	B	0.00000	0.00000	0.00000
	B	0.00526	0.00804	0.06767

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	0.01068	0.01301	0.08113
	B	0.00000	0.00000	0.00000
	B	0.00887	0.01271	0.09221
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01469	0.01624	0.08393
	B	0.00000	0.00000	0.00000
	B	0.01286	0.01596	0.09443
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02681	0.02431	0.08991
	B	0.00000	0.00000	0.00000
	B	0.02491	0.02396	0.09951
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.06258	0.04419	0.10331
	B	0.00000	0.00000	0.00000
	B	0.06115	0.04344	0.11185
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00941	0.01168	0.07176
	B	0.00000	0.00000	0.00000
	B	0.00820	0.01176	0.08345

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)	-0.00177	-0.00232	-0.00222
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00177	-0.00231	-0.00221
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00175	-0.00230	-0.00219
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00172	-0.00226	-0.00216
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00108	-0.00147	-0.00091

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)	0.00285	0.00288	0.00282
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00286	0.00289	0.00283
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00288	0.00290	0.00284
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00291	0.00294	0.00288
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00261	0.00262	0.00244

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)	-0.00098	-0.00100	-0.00097
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00098	-0.00099	-0.00096
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00096	-0.00097	-0.00095
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00093	-0.00094	-0.00091
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00066	-0.00067	-0.00062

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)	0.00130	0.00131	0.00120
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00131	0.00132	0.00121
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00132	0.00133	0.00123
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00135	0.00137	0.00126
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00127	0.00126	0.00103

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00312	0.00408	0.71613
sky130_osu_sc_12T_hs__tbufi_l	0.00240	0.00316	0.49357

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	18.39820	68.70210
sky130_osu_sc_12T_hs__tbufi_l	0.00000	51.12570	201.41000

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)	0.03607	0.70197	9.34101
	OE->Y (FR)	0.04046	0.32105	5.09331
	OE->Y (RR)	0.06743	0.59708	6.34972
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.04278	0.75596	9.01245
	OE->Y (FR)	0.04110	0.32100	5.09326
	OE->Y (RR)	0.07128	0.66378	6.27674

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)	0.03022	0.54143	7.27379
	OE->Y (FF)	0.04133	0.32104	5.09327
	OE->Y (RF)	0.02714	0.49052	6.36798
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.03261	0.55906	6.81197
	OE->Y (FF)	0.04189	0.32100	5.09325
	OE->Y (RF)	0.02964	0.50594	5.88142

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	0.00516	0.00657	0.03144
	OE	0.00000	0.00000	0.00000
	OE	0.00511	0.00952	0.10323
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00598	0.00724	0.03315
	OE	0.00000	0.00000	0.00000
	OE	0.00559	0.00968	0.09613

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	0.00091	0.00217	0.02103
	OE	0.00000	0.00000	0.00000
	OE	0.00394	0.00875	0.11312
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00377	0.00448	0.01925
	OE	0.00000	0.00000	0.00000
	OE	0.00569	0.01002	0.10183

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)	-0.00197	-0.00198	-0.00196
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00159	-0.00160	-0.00158
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00146	-0.00147	-0.00143
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00113	-0.00114	-0.00111

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)	0.00197	0.00198	0.00196
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00182	0.00183	0.00176
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00146	0.00147	0.00143
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00155	0.00155	0.00142

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)	0.00225	0.00728	0.11302
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00174	0.00679	0.11260
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00292	0.00745	0.10057
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00186	0.00642	0.09987

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)	0.00521	0.01055	0.11666
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00504	0.01044	0.11646
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00400	0.00901	0.10361
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00381	0.00883	0.10308

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00312	0.00469	0.71637
sky130_osu_sc_12T_hs__tnbufi_l	0.00230	0.00354	0.49418

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	29.53130	35.31640
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	84.58830	101.48600

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)	0.03636	0.70202	9.34249
	OE->Y (RR)	0.02717	0.32139	5.09363
	OE->Y (FR)	0.04521	0.66959	8.53590
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.04202	0.75505	9.01593
	OE->Y (RR)	0.02839	0.32110	5.09334
	OE->Y (FR)	0.04933	0.72746	8.24697

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)	0.02963	0.54321	7.27578
	OE->Y (RF)	0.02689	0.32140	5.09363
	OE->Y (FF)	0.04859	0.45901	4.99982
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.03114	0.55814	6.81700
	OE->Y (RF)	0.02812	0.32112	5.09333
	OE->Y (FF)	0.05304	0.47940	4.62491

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	0.00439	0.00580	0.03077
	OE	0.00000	0.00000	0.00000
	OE	0.01056	0.01635	0.12136
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00329	0.00458	0.03069
	OE	0.00000	0.00000	0.00000
	OE	0.00800	0.01326	0.10695

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	-0.00001	0.00110	0.02015
	OE	0.00000	0.00000	0.00000
	OE	0.00965	0.01536	0.11300
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00153	0.00225	0.01705
	OE	0.00000	0.00000	0.00000
	OE	0.00860	0.01378	0.10254

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)	-0.00144	-0.00145	-0.00138
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00097	-0.00098	-0.00096
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00032	-0.00033	-0.00027
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00004	0.00003	0.00006

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)	0.00192	0.00193	0.00191
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00178	0.00179	0.00173
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00203	0.00204	0.00200
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00212	0.00212	0.00200

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)	-0.00229	0.00256	0.10886
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00261	0.00246	0.10863
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00080	0.00357	0.09768
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00115	0.00338	0.09701

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)	0.00822	0.01416	0.12074
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00783	0.01392	0.12044
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00699	0.01232	0.10669
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00603	0.01147	0.10602

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_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	0.00627	0.00540	0.73479

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	64.80340	103.81600

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_1	A->Y (RR)	B	0.08500	0.62372	6.46624
	A->Y (FR)	!B	0.04719	0.70897	9.37458
	B->Y (RR)	A	0.06856	0.61435	6.63405
	B->Y (FR)	!A	0.05974	0.68816	8.78583

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_1	A->Y (FF)	B	0.08539	0.52622	5.37480
	A->Y (RF)	!B	0.04035	0.51434	6.66478
	B->Y (FF)	A	0.07281	0.51558	5.38236
	B->Y (RF)	!A	0.05015	0.52533	6.66680

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	0.00640	0.01061	0.10850
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01052	0.01718	0.14787
	B	A	0.00000	0.00000	0.00000
	B	A	0.00343	0.00844	0.11631
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01138	0.01748	0.14405

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	0.01413	0.01894	0.12409
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00499	0.01043	0.13475
	B	A	0.00000	0.00000	0.00000
	B	A	0.01336	0.01881	0.12593
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00540	0.01084	0.13467

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xor2_l	0.00629	0.00544	0.70304

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_l	0.00000	64.79500	114.42100

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_1	A->Y (RR)	!B	0.08470	0.63684	6.67193
	A->Y (FR)	B	0.06353	0.71078	8.97385
	B->Y (RR)	!A	0.07202	0.63255	6.68772
	B->Y (FR)	A	0.06789	0.71424	8.95528

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_1	A->Y (FF)	!B	0.07795	0.51200	5.06653
	A->Y (RF)	B	0.04444	0.55568	7.17630
	B->Y (FF)	!A	0.07509	0.51506	5.25551
	B->Y (RF)	A	0.04907	0.51606	6.43845

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	0.01346	0.01924	0.14123
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00342	0.00729	0.11042
	B	A	0.00000	0.00000	0.00000
	B	A	0.01371	0.01952	0.14017
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00258	0.00727	0.11206

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	0.00481	0.00990	0.12916
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01438	0.01937	0.11466
	B	A	0.00000	0.00000	0.00000
	B	A	0.00475	0.00973	0.12781
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01282	0.01817	0.12217

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_tt_1P80_150C.ccs
Cell Library: Process , Voltage 1.80, Temp 150.00

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	0.55043
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	201633.00000	403266.00000
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
	-0.00129	0.05765	0.90145

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
	3.51006	3.35958	1.05560