sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs Library

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

SKY130_OSU_SC_12T_HS__ADDFx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addf_1	31.25760
sky130_osu_sc_12T_hs__addf_l	31.25760

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	**B**	**CI**	**CO**	**CON**	**S**
sky130_osu_sc_12T_hs__addf_1	0.00990	0.00994	0.00782	0.19133	0.06981	0.17624
sky130_osu_sc_12T_hs__addf_l	0.00991	0.00994	0.00784	0.15750	0.07035	0.17651

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.00025	0.00026
sky130_osu_sc_12T_hs__addf_l	0.00000	0.00025	0.00026

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)	0.41490	2.38938	17.59610
	B->CO (RR)	0.39793	2.35135	17.64670
	CI->CO (RR)	0.39971	2.39647	17.98050
	CON->CO (FR)	0.13756	1.50753	13.75350
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.38629	2.23928	15.83150
	B->CO (RR)	0.37075	2.20930	15.96870
	CI->CO (RR)	0.37106	2.24593	16.22970
	CON->CO (FR)	0.13423	1.47412	12.86190

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)	1.53919	6.05694	38.85390
	B->CO (FF)	1.42725	5.85732	38.17470
	CI->CO (FF)	1.41128	5.87163	38.26970
	CON->CO (RF)	0.03388	0.57921	6.33768
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	1.46769	5.58019	33.75070
	B->CO (FF)	1.35792	5.38948	33.16950
	CI->CO (FF)	1.33875	5.39497	33.18150
	CON->CO (RF)	0.03529	0.58782	6.28446

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)	1.11715	2.84144	14.40870
	B->CON (FR)	1.02057	2.70985	14.17690
	CI->CON (FR)	0.98856	2.65496	13.86510
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	1.06976	2.79903	14.41290
	B->CON (FR)	0.97416	2.66829	14.18020
	CI->CON (FR)	0.94111	2.61274	13.86810

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)	0.15024	0.66120	5.32787
	B->CON (RF)	0.14045	0.66667	5.49826
	CI->CON (RF)	0.13507	0.66921	5.57164
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.14458	0.65655	5.32953
	B->CON (RF)	0.13502	0.66202	5.50016
	CI->CON (RF)	0.12940	0.66437	5.57374

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)	2.00438	6.59047	37.40110
	B->S (-R)	1.90052	6.43837	36.96060
	CI->S (-R)	1.86861	6.39134	36.79210
	CON->S (RR)	0.27561	1.56172	10.17250
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	1.92413	6.52835	37.38550
	B->S (-R)	1.82126	6.37722	36.94430
	CI->S (-R)	1.78809	6.32996	36.77490
	CON->S (RR)	0.27578	1.56296	10.18350

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)	1.03450	2.27181	11.67180
	B->S (-F)	1.07522	2.27667	11.75730
	CI->S (-F)	1.01783	2.27669	12.04900
	CON->S (FF)	0.57078	1.24376	8.10240
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	1.02142	2.26210	11.66950
	B->S (-F)	1.06181	2.26480	11.75520
	CI->S (-F)	1.00433	2.26501	12.04670
	CON->S (FF)	0.57070	1.24397	8.10408

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	0.00131	0.00130	0.00125
	B	0.00145	0.00149	0.00143
	CI	0.00154	0.00157	0.00153
sky130_osu_sc_12T_hs__addf_l	A	0.00118	0.00117	0.00111
	B	0.00132	0.00136	0.00128
	CI	0.00141	0.00144	0.00137

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00419	0.00418	0.00415
	B	0.00417	0.00416	0.00412
	CI	0.00361	0.00367	0.00362
sky130_osu_sc_12T_hs__addf_l	A	0.00409	0.00407	0.00404
	B	0.00406	0.00405	0.00399
	CI	0.00350	0.00356	0.00352

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00419	0.00417	0.00414
	B	0.00417	0.00415	0.00410
	CI	0.00361	0.00364	0.00362
sky130_osu_sc_12T_hs__addf_l	A	0.00409	0.00407	0.00403
	B	0.00406	0.00403	0.00399
	CI	0.00350	0.00353	0.00351

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00130	0.00128	0.00121
	B	0.00144	0.00146	0.00135
	CI	0.00153	0.00154	0.00147
sky130_osu_sc_12T_hs__addf_l	A	0.00117	0.00115	0.00107
	B	0.00131	0.00133	0.00122
	CI	0.00142	0.00144	0.00139

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00420	0.00419	0.00415
	B	0.00417	0.00416	0.00412
	CI	0.00362	0.00367	0.00363
sky130_osu_sc_12T_hs__addf_l	A	0.00409	0.00408	0.00404
	B	0.00407	0.00406	0.00401
	CI	0.00351	0.00356	0.00352

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00834	0.00834	0.00828
	B	0.00789	0.00777	0.00764
	CI	0.00682	0.00681	0.00676
sky130_osu_sc_12T_hs__addf_l	A	0.00834	0.00835	0.00828
	B	0.00788	0.00777	0.00764
	CI	0.00682	0.00681	0.00677

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addh_1	18.55920
sky130_osu_sc_12T_hs__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_hs__addh_1	0.00489	0.00515	0.18789	0.18527	0.19040
sky130_osu_sc_12T_hs__addh_l	0.00484	0.00512	0.16188	0.18514	0.16010

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.00021	0.00025
sky130_osu_sc_12T_hs__addh_l	0.00000	0.00021	0.00024

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)	0.43141	1.74610	11.55450
	B->CO (RR)	0.43641	1.75169	11.72240
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.29728	1.56252	9.80857
	B->CO (RR)	0.30072	1.55214	9.90751

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)	0.51347	1.28310	8.89922
	B->CO (FF)	0.53275	1.30493	8.95724
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.41728	1.11990	8.11631
	B->CO (FF)	0.43686	1.14296	8.18600

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)	0.64601	1.91532	11.52980
	B->CON (RR)	0.65056	1.91944	11.69650
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.49060	1.71048	10.11610
	B->CON (RR)	0.49366	1.69554	10.20130

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)	0.59761	1.32872	8.90910
	B->CON (FF)	0.61020	1.34567	8.95977
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.47277	1.12012	8.02768
	B->CON (FF)	0.48748	1.14084	8.08807

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)	0.85743	2.78100	18.40150
	B->S (FR)	0.87068	2.79686	18.45870
	CON->S (FR)	0.14314	1.51369	13.76800
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.68024	2.37258	15.76970
	B->S (FR)	0.69577	2.39199	15.83060
	CON->S (FR)	0.13335	1.47700	12.96550

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)	0.93758	3.36167	20.77010
	B->S (RF)	0.94202	3.36544	20.93420
	CON->S (RF)	0.04726	0.71180	7.94419
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.69220	2.66660	15.36820
	B->S (RF)	0.69570	2.65276	15.45570
	CON->S (RF)	0.03453	0.59451	6.33516

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	0.00223	0.00220	0.00212
	B	0.00000	0.00000	0.00000
	B	0.00213	0.00210	0.00203
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00189	0.00183	0.00176
	B	0.00000	0.00000	0.00000
	B	0.00179	0.00173	0.00167

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	0.00307	0.00305	0.00290
	B	0.00000	0.00000	0.00000
	B	0.00320	0.00323	0.00310
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00275	0.00270	0.00258
	B	0.00000	0.00000	0.00000
	B	0.00288	0.00289	0.00278

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	0.00223	0.00220	0.00212
	B	0.00000	0.00000	0.00000
	B	0.00213	0.00210	0.00203
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00189	0.00183	0.00176
	B	0.00000	0.00000	0.00000
	B	0.00179	0.00173	0.00166

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	0.00307	0.00305	0.00291
	B	0.00000	0.00000	0.00000
	B	0.00320	0.00323	0.00311
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00276	0.00270	0.00256
	B	0.00000	0.00000	0.00000
	B	0.00288	0.00288	0.00276

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	0.00308	0.00305	0.00300
	B	0.00000	0.00000	0.00000
	B	0.00320	0.00323	0.00320
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00276	0.00271	0.00265
	B	0.00000	0.00000	0.00000
	B	0.00288	0.00289	0.00286

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	0.00223	0.00220	0.00212
	B	0.00000	0.00000	0.00000
	B	0.00213	0.00210	0.00203
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00189	0.00183	0.00175
	B	0.00000	0.00000	0.00000
	B	0.00179	0.00173	0.00166

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.08512	0.08038	0.01517
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	0.08525	0.08038	0.01520

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.08501	0.07983	0.01303
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	0.08516	0.07996	0.01307

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__and2_1	0.00260	0.00269	0.18514
sky130_osu_sc_12T_hs__and2_2	0.00260	0.00269	0.37546
sky130_osu_sc_12T_hs__and2_4	0.00260	0.00269	0.73398
sky130_osu_sc_12T_hs__and2_6	0.00263	0.00269	1.06627
sky130_osu_sc_12T_hs__and2_8	0.00260	0.00269	1.47002
sky130_osu_sc_12T_hs__and2_l	0.00201	0.00207	0.16383

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.00009	0.00011
sky130_osu_sc_12T_hs__and2_2	0.00000	0.00012	0.00014
sky130_osu_sc_12T_hs__and2_4	0.00000	0.00020	0.00021
sky130_osu_sc_12T_hs__and2_6	0.00000	0.00027	0.00028
sky130_osu_sc_12T_hs__and2_8	0.00000	0.00034	0.00036
sky130_osu_sc_12T_hs__and2_l	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.25493	1.48433	9.75089
	B->Y (RR)	0.26267	1.48281	9.90142
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.26128	1.31500	10.11490
	B->Y (RR)	0.26886	1.30704	10.21650
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.34773	1.26643	10.53090
	B->Y (RR)	0.35522	1.25619	10.56940
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.43951	1.29658	10.71970
	B->Y (RR)	0.44683	1.28549	10.72300
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.52786	1.36687	11.32650
	B->Y (RR)	0.53547	1.35820	11.28000
sky130_osu_sc_12T_hs__and2_l	A->Y (RR)	0.23316	1.47379	9.39364
	B->Y (RR)	0.24009	1.47234	9.54638

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)**	0.32484	0.97998	7.63723
	B->Y (FF)	0.34782	1.00411	7.72971
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.41656	1.06607	8.01274
	B->Y (FF)	0.43729	1.08812	8.08153
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.62690	1.28856	8.55682
	B->Y (FF)	0.64177	1.30848	8.59984
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.84251	1.52263	8.94644
	B->Y (FF)	0.85048	1.53060	8.97108
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	1.04703	1.75038	9.32257
	B->Y (FF)	1.04926	1.75334	9.33911
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.27742	0.93203	7.15095
	B->Y (FF)	0.30439	0.95814	7.23984

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	0.00155	0.00147	0.00137
	B	0.00000	0.00000	0.00000
	B	0.00159	0.00150	0.00142
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00281	0.00283	0.00273
	B	0.00000	0.00000	0.00000
	B	0.00284	0.00288	0.00278
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00573	0.00586	0.00589
	B	0.00000	0.00000	0.00000
	B	0.00576	0.00593	0.00595
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.00863	0.00894	0.00898
	B	0.00000	0.00000	0.00000
	B	0.00868	0.00901	0.00907
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01153	0.01196	0.01209
	B	0.00000	0.00000	0.00000
	B	0.01156	0.01199	0.01218
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00122	0.00116	0.00110
	B	0.00000	0.00000	0.00000
	B	0.00124	0.00118	0.00113

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	0.00378	0.00367	0.00361
	B	0.00000	0.00000	0.00000
	B	0.00421	0.00411	0.00404
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00473	0.00477	0.00470
	B	0.00000	0.00000	0.00000
	B	0.00518	0.00521	0.00513
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00714	0.00745	0.00741
	B	0.00000	0.00000	0.00000
	B	0.00758	0.00789	0.00783
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.00963	0.01019	0.01023
	B	0.00000	0.00000	0.00000
	B	0.01007	0.01059	0.01062
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01196	0.01273	0.01290
	B	0.00000	0.00000	0.00000
	B	0.01241	0.01314	0.01331
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00289	0.00279	0.00275
	B	0.00000	0.00000	0.00000
	B	0.00322	0.00313	0.00308

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)	-0.00122	-0.00123	-0.00123
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00122	-0.00123	-0.00123
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00122	-0.00123	-0.00123
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00124	-0.00124	-0.00125
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00123	-0.00123	-0.00123
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00086	-0.00086	-0.00087

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)	0.00123	0.00124	0.00123
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00123	0.00125	0.00123
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00123	0.00125	0.00123
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00125	0.00126	0.00125
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00123	0.00125	0.00123
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00087	0.00087	0.00087

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)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00116	-0.00116	-0.00116
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00081	-0.00082	-0.00082

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)	0.00116	0.00117	0.00116
sky130_osu_sc_12T_hs__and2_2	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00116	0.00117	0.00116
sky130_osu_sc_12T_hs__and2_4	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00116	0.00117	0.00116
sky130_osu_sc_12T_hs__and2_6	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00116	0.00117	0.00116
sky130_osu_sc_12T_hs__and2_8	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00116	0.00117	0.00116
sky130_osu_sc_12T_hs__and2_l	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00082	0.00082	0.00082

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__aoi21_l	0.00230	0.00250	0.00253	0.07415

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00005	0.00009

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)	0.54694	2.35497	14.41110
	A1->Y (FR)	0.46232	2.21063	14.04820
	B0->Y (FR)	0.46241	2.19633	13.89330

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)	0.06818	0.58250	5.28532
	A1->Y (RF)	0.06270	0.59576	5.45950
	B0->Y (RF)	0.04078	0.52156	5.00892

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	0.00273	0.00268	0.00266
	A1	0.00000	0.00000	0.00000
	A1	0.00233	0.00227	0.00224
	B0	0.00243	0.00232	0.00231

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	0.00035	0.00031	0.00024
	A1	0.00000	0.00000	0.00000
	A1	0.00036	0.00031	0.00024
	B0	-0.00021	-0.00020	-0.00026

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)	-0.00094	-0.00096	-0.00096
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00099	-0.00099	-0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00099	-0.00099	-0.00099

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)	0.00095	0.00097	0.00096
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00099	0.00100	0.00100
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00099	0.00100	0.00100

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)	-0.00094	-0.00097	-0.00096
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00099	-0.00099	-0.00099
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00110	-0.00111	-0.00111

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)	0.00096	0.00097	0.00096
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00099	0.00099	0.00100
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00111	0.00112	0.00111

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)	-0.00064	-0.00064	-0.00064

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00070	0.00071	0.00066

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__aoi22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	**A1**	**B0**	**B1**	**Y**
sky130_osu_sc_12T_hs__aoi22_l	0.00230	0.00249	0.00266	0.00246	0.07322

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi22_l	A0->Y (FR)	0.69358	2.49846	14.48980
	A1->Y (FR)	0.62124	2.41390	14.38470
	B0->Y (FR)	0.48937	2.18077	13.82160
	B1->Y (FR)	0.56225	2.29328	13.92880

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)	0.08177	0.59767	5.29619
	A1->Y (RF)	0.07628	0.61024	5.47170
	B0->Y (RF)	0.05996	0.58615	5.41633
	B1->Y (RF)	0.06538	0.57361	5.24766

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	0.00335	0.00330	0.00325
	A1	0.00296	0.00289	0.00283
	B0	0.00259	0.00238	0.00244
	B1	0.00298	0.00291	0.00287

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00081	0.00077	0.00068
	A1	0.00081	0.00077	0.00068
	B0	-0.00010	-0.00010	-0.00015
	B1	-0.00011	-0.00010	-0.00014

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)	-0.00094	-0.00097	-0.00096
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00099	-0.00100	-0.00099
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00099	-0.00100	-0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00099	-0.00099	-0.00099

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)	0.00095	0.00097	0.00096
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00099	0.00101	0.00100
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00099	0.00100	0.00099
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00099	0.00100	0.00099

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)	-0.00095	-0.00097	-0.00096
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00099	-0.00100	-0.00100
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00110	-0.00111	-0.00111
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00110	-0.00111	-0.00111

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)	0.00096	0.00097	0.00096
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00099	0.00101	0.00100
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00110	0.00113	0.00111
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00110	0.00113	0.00111

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)	-0.00064	-0.00064	-0.00064
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00064	-0.00064	-0.00064
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00116	-0.00117	-0.00117
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00116	-0.00117	-0.00117

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)	0.00070	0.00070	0.00065
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00064	0.00064	0.00064
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00117	0.00117	0.00117
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00117	0.00117	0.00117

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)	-0.00065	-0.00066	-0.00065
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00064	-0.00065	-0.00065
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00105	-0.00106	-0.00106
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00105	-0.00106	-0.00106

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)	0.00071	0.00071	0.00066
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00064	0.00065	0.00065
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00105	0.00106	0.00106
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00105	0.00106	0.00106

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__buf_1	0.00271	0.18300
sky130_osu_sc_12T_hs__buf_2	0.00271	0.37251
sky130_osu_sc_12T_hs__buf_4	0.00270	0.74329
sky130_osu_sc_12T_hs__buf_6	0.00082	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00271	1.43216
sky130_osu_sc_12T_hs__buf_l	0.00205	0.16387

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.00007	0.00007
sky130_osu_sc_12T_hs__buf_2	0.00000	0.00011	0.00011
sky130_osu_sc_12T_hs__buf_4	0.00000	0.00018	0.00019
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.00032	0.00034
sky130_osu_sc_12T_hs__buf_l	0.00000	0.00007	0.00007

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)**	0.20227	1.44668	9.77245
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.18205	1.23550	10.00810
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.22746	1.14972	10.40970
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.33062	1.15061	10.78590
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.18569	1.41638	9.27259

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)**	0.31133	0.96269	7.57156
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.40196	1.04755	7.95226
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.61350	1.27181	8.54000
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	1.03457	1.72189	9.27695
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.27082	0.92415	7.11202

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	0.00150	0.00138	0.00127
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00275	0.00272	0.00293
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00568	0.00580	0.00575
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01149	0.01180	0.01200
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00119	0.00110	0.00102

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	0.00375	0.00363	0.00356
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00467	0.00468	0.00461
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00709	0.00736	0.00732
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01195	0.01264	0.01282
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00291	0.00280	0.00274

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
	-0.00032	-0.00032	-0.00032

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
	0.00032	0.00032	0.00032

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffr_1	42.49080
sky130_osu_sc_12T_hs__dffr_l	42.49080

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_12T_hs__dffr_1	0.00242	0.00246	0.00827	0.18840	0.18563
sky130_osu_sc_12T_hs__dffr_l	0.00242	0.00246	0.00827	0.16104	0.16156

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.00040	0.00044
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.00040	0.00044

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)	1.61175	3.30983	13.99610
	QN->Q (FR)	0.14688	1.56352	14.18120
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	1.50380	3.21335	13.48570
	QN->Q (FR)	0.13854	1.51524	13.32370

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)	1.51645	3.61941	17.93700
	QN->Q (RF)	0.03661	0.60838	6.74235
	RN->Q (FF)	1.01657	3.26186	20.87510
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	1.47648	3.63325	17.56500
	QN->Q (RF)	0.03732	0.61782	6.67649
	RN->Q (FF)	0.97670	3.28220	20.49100

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)	1.35516	2.58962	11.07360
	RN->QN (FR)	0.85386	2.23319	14.01740
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	1.31713	2.56234	10.78540
	RN->QN (FR)	0.81580	2.20523	13.71560

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)**	1.35419	1.96937	5.45308
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	1.26661	1.89821	5.43757

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)	-0.12521	-0.15022	-0.80595
	setup	CK (R)	1.17832	1.18049	1.79165
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.12557	-0.15022	-0.80607
	setup	CK (R)	1.19016	1.19377	1.81152

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)	-0.80285	-1.16836	-12.75850
	setup	CK (R)	0.88836	1.24816	12.89470
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.80580	-1.16569	-12.75970
	setup	CK (R)	0.89052	1.24856	12.89750

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)	-0.12521	-0.15022	-0.80595
	setup	CK (R)	1.17832	1.18049	1.79165
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.12557	-0.15022	-0.80607
	setup	CK (R)	1.19016	1.19377	1.81152

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)	-0.80285	-1.16836	-12.75850
	setup	CK (R)	0.88836	1.24816	12.89470
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.80580	-1.16569	-12.75970
	setup	CK (R)	0.89052	1.24856	12.89750

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)	1.11951	1.12831	1.57057
	removal	CK (R)	-0.13489	-0.17182	-0.04154
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	1.13484	1.14115	1.58860
	removal	CK (R)	-0.13381	-0.17182	-0.04554

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)	1.11951	1.12831	1.57057
	removal	CK (R)	-0.13489	-0.17182	-0.04154
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	1.13484	1.14115	1.58860
	removal	CK (R)	-0.13381	-0.17182	-0.04554

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 ()	0.67946	0.97943	13.33370
	min_pulse_width	RN ()	0.70039	0.97723	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.64967	0.96845	13.33370
	min_pulse_width	RN ()	0.69044	0.96845	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 ()	0.60341	0.71153	13.33370
	min_pulse_width	CK ()	0.85668	0.74447	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.54936	0.66542	13.33370
	min_pulse_width	CK ()	0.84593	0.73130	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 ()	1.64716	1.69966	13.33370
	min_pulse_width	CK ()	0.72666	1.03652	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	1.65779	1.71064	13.33370
	min_pulse_width	CK ()	0.72666	1.03652	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	0.00374	0.00357	0.00271
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00337	0.00319	0.00252

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	0.00412	0.00401	0.00376
	RN	-0.00053	-0.01055	-0.07717
	RN	0.00917	0.00913	0.00877
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00374	0.00363	0.00342
	RN	-0.00053	-0.00960	-0.06596
	RN	0.00879	0.00875	0.00844

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	0.00412	0.00402	0.00376
	RN	-0.00053	-0.01045	-0.07603
	RN	0.00917	0.00914	0.00878
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00375	0.00364	0.00343
	RN	-0.00053	-0.00962	-0.06617
	RN	0.00879	0.00875	0.00844

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	0.00373	0.00356	0.00252
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00336	0.00318	0.00237

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	-0.00095	-0.00098	-0.00097
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00423	0.00414	0.00400
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00162	0.00154	0.00144
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00095	-0.00098	-0.00097
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00423	0.00414	0.00400
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00162	0.00155	0.00144

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	0.00097	0.00099	0.00097
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00637	0.00630	0.00618
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00306	0.00297	0.00294
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00097	0.00099	0.00097
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00638	0.00631	0.00618
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00306	0.00297	0.00294

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)	0.00151	0.00142	0.00131
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00435	0.00416	0.00396
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)	0.00151	0.00142	0.00131
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00435	0.00417	0.00396

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)	0.00368	0.00355	0.00350
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00715	0.00702	0.00685
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)	0.00368	0.00355	0.00350
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00716	0.00703	0.00685

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)	-0.00024	-0.00037	-0.00053
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00207	0.00186	0.00154
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00023	-0.00037	-0.00053
sky130_osu_sc_12T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00024	-0.00037	-0.00053
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00207	0.00186	0.00154
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00023	-0.00037	-0.00053

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)	0.00602	0.00580	0.00572
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01121	0.01101	0.01065
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00847	0.00832	0.00813
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01125	0.01093	0.01068
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00613	0.00589	0.00581
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00602	0.00580	0.00572
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01121	0.01101	0.01065
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00847	0.00832	0.00813
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01126	0.01093	0.01068
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00613	0.00589	0.00581

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffsr_1	46.39800
sky130_osu_sc_12T_hs__dffsr_l	46.39800

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_12T_hs__dffsr_1	0.00239	0.00248	0.00562	0.00836	0.19089	0.18767
sky130_osu_sc_12T_hs__dffsr_l	0.00239	0.00248	0.00564	0.00836	0.15988	0.16145

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.00042	0.00048
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.00042	0.00048

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)	1.79627	3.50280	14.34770
	QN->Q (FR)	0.14181	1.54456	14.02700
	RN->Q (RR)	1.51655	3.23104	14.16740
	SN->Q (FR)	1.54994	3.38149	17.83050
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	1.70859	3.42833	13.77740
	QN->Q (FR)	0.13819	1.51106	13.27410
	RN->Q (RR)	1.42662	3.15664	13.59660
	SN->Q (FR)	1.46105	3.30759	17.25510

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)	1.71197	3.82233	18.16310
	QN->Q (RF)	0.03638	0.60943	6.76590
	RN->Q (FF)	1.08790	3.32286	21.02000
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	1.67135	3.83532	17.68220
	QN->Q (RF)	0.03715	0.61914	6.65903
	RN->Q (FF)	1.05336	3.34674	20.53750

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)	1.54914	2.79046	11.26040
	RN->QN (FR)	0.92764	2.29280	14.12180
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	1.50873	2.76889	10.99800
	RN->QN (FR)	0.89325	2.27722	13.85410

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)	1.54737	2.18158	5.80908
	RN->QN (RF)	1.26210	1.91946	5.63780
	SN->QN (FF)	1.29548	2.06951	9.30068
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	1.47562	2.12479	5.79736
	RN->QN (RF)	1.18925	1.86270	5.63227
	SN->QN (FF)	1.22321	2.01371	9.27981

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)	-0.16729	-0.18511	-0.91903
	setup	CK (R)	1.33682	1.31521	1.83213
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.16540	-0.18586	-0.91744
	setup	CK (R)	1.34359	1.32325	1.85625

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)	-0.93384	-1.27903	-13.02240
	setup	CK (R)	1.02491	1.34727	13.11070
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.93518	-1.27619	-13.02210
	setup	CK (R)	1.02627	1.34755	13.11040

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)	-0.16729	-0.18511	-0.91903
	setup	CK (R)	1.33682	1.31521	1.83213
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.16540	-0.18586	-0.91744
	setup	CK (R)	1.34359	1.32325	1.85625

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)	-0.93384	-1.27903	-13.02240
	setup	CK (R)	1.02491	1.34727	13.11070
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.93518	-1.27619	-13.02210
	setup	CK (R)	1.02627	1.34755	13.11040

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)	1.20169	1.19150	1.56686
	removal	CK (R)	-0.14009	-0.17189	-0.14967
	hold	SN (R)	-1.25910	-1.46831	-10.18860
	setup	SN (R)	1.28256	1.51124	11.02870
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	1.20985	1.19928	1.58471
	removal	CK (R)	-0.14255	-0.17061	-0.14962
	hold	SN (R)	-1.18291	-1.39086	-10.06360
	setup	SN (R)	1.27161	1.47690	10.94490

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)	1.20169	1.19150	1.56686
	removal	CK (R)	-0.14009	-0.17189	-0.14967
	hold	SN (R)	-1.26502	-1.47078	-10.18860
	hold	SN (R)	-1.25910	-1.46831	-10.19730
	setup	SN (R)	1.28256	1.50665	11.01040
	setup	SN (R)	1.27778	1.51124	11.02870
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	1.20985	1.19928	1.58471
	removal	CK (R)	-0.14255	-0.17061	-0.14962
	hold	SN (R)	-1.19756	-1.39086	-10.06870
	hold	SN (R)	-1.18291	-1.39113	-10.06360
	setup	SN (R)	1.27161	1.47690	10.90970
	setup	SN (R)	1.20794	1.43422	10.94490

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 ()	0.76003	1.03871	13.33370
	min_pulse_width	RN ()	0.77596	1.03871	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.73236	1.02773	13.33370
	min_pulse_width	RN ()	0.77175	1.02773	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)	0.06716	0.08000	0.61827
	removal	CK (R)	-0.01272	-0.03533	-0.44933
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.06733	0.08000	0.61648
	removal	CK (R)	-0.01272	-0.03533	-0.44933

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)	0.06716	0.08000	0.61827
	removal	CK (R)	-0.01272	-0.03533	-0.44933
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.06733	0.08000	0.61648
	removal	CK (R)	-0.01272	-0.03533	-0.44933

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 ()	1.27914	1.58108	13.94570
	min_pulse_width	SN ()	1.31146	1.58328	13.93590
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	1.26033	1.51082	13.76990
	min_pulse_width	SN ()	1.24105	1.50862	13.77970

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 ()	0.76680	0.84768	13.33370
	min_pulse_width	CK ()	0.95075	0.84109	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.72123	0.79717	13.33370
	min_pulse_width	CK ()	0.94220	0.83230	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 ()	1.81540	1.85117	13.33370
	min_pulse_width	CK ()	0.87342	1.14631	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	1.82186	1.85776	13.33370
	min_pulse_width	CK ()	0.87562	1.14631	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	0.00440	0.00428	0.00340
	RN	0.00829	0.00816	0.00734
	SN	-0.00053	-0.01063	-0.07819
	SN	0.00889	0.00878	0.00801
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00406	0.00393	0.00325
	RN	0.00794	0.00781	0.00719
	SN	-0.00053	-0.00956	-0.06549
	SN	0.00855	0.00843	0.00783

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	0.00462	0.00455	0.00433
	RN	-0.00053	-0.01063	-0.07819
	RN	0.00973	0.00971	0.00940
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00426	0.00418	0.00395
	RN	-0.00053	-0.00956	-0.06549
	RN	0.00936	0.00932	0.00903

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	0.00464	0.00456	0.00435
	RN	-0.00053	-0.01052	-0.07687
	RN	0.00973	0.00971	0.00941
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00427	0.00419	0.00397
	RN	-0.00053	-0.00961	-0.06613
	RN	0.00937	0.00933	0.00902

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	0.00439	0.00426	0.00320
	RN	0.00826	0.00814	0.00715
	SN	-0.00053	-0.01052	-0.07687
	SN	0.00888	0.00876	0.00782
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00404	0.00391	0.00308
	RN	0.00791	0.00779	0.00703
	SN	-0.00053	-0.00961	-0.06613
	SN	0.00853	0.00841	0.00768

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	-0.00096	-0.00099	-0.00098
	(!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)	0.00517	0.00509	0.00497
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00176	0.00169	0.00159
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00175	0.00168	0.00158
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00178	0.00171	0.00160
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00096	-0.00099	-0.00098
	(!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)	0.00517	0.00509	0.00497
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00176	0.00169	0.00159
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00175	0.00168	0.00158
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00178	0.00171	0.00160

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	0.00098	0.00099	0.00098
	(!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)	0.00721	0.00714	0.00696
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00340	0.00333	0.00330
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00343	0.00336	0.00332
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00339	0.00332	0.00328
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00098	0.00099	0.00098
	(!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)	0.00720	0.00714	0.00696
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00340	0.00333	0.00330
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00343	0.00336	0.00332
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00339	0.00332	0.00328

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)	0.00149	0.00140	0.00124
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00519	0.00501	0.00476
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)	0.00149	0.00140	0.00124
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00519	0.00501	0.00476

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)	0.00409	0.00396	0.00392
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00766	0.00753	0.00733
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)	0.00409	0.00396	0.00392
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00766	0.00753	0.00733

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)	-0.00260	-0.00263	-0.00262
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00282	-0.00285	-0.00284
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00261	-0.00263	-0.00263
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00089	0.00081	0.00063
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)	-0.00260	-0.00263	-0.00262
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00282	-0.00285	-0.00284
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00261	-0.00263	-0.00263
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00089	0.00081	0.00063

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)	0.00262	0.00264	0.00262
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00284	0.00285	0.00284
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00262	0.00265	0.00263
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00590	0.00576	0.00574
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)	0.00262	0.00264	0.00262
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00284	0.00285	0.00284
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00262	0.00265	0.00263
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00590	0.00576	0.00574

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)	-0.00028	-0.00041	-0.00056
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00253	0.00234	0.00202
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00249	0.00231	0.00198
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00016	-0.00030	-0.00045
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00151	0.00131	0.00102
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00028	-0.00041	-0.00057
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00253	0.00234	0.00202
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00249	0.00231	0.00198
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00016	-0.00030	-0.00046
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00151	0.00131	0.00102

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)	0.01230	0.01210	0.01169
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00613	0.00591	0.00582
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00858	0.00845	0.00827
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00862	0.00846	0.00828
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01213	0.01180	0.01147
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00613	0.00589	0.00582
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00797	0.00758	0.00746
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01230	0.01210	0.01169
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00613	0.00591	0.00582
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00858	0.00845	0.00827
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00862	0.00846	0.00828
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01213	0.01180	0.01147
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00613	0.00589	0.00582
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00797	0.00758	0.00746

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dffs_1	38.58360
sky130_osu_sc_12T_hs__dffs_l	38.58360

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_12T_hs__dffs_1	0.00240	0.00495	0.00818	0.18396	0.18708
sky130_osu_sc_12T_hs__dffs_l	0.00240	0.00493	0.00817	0.16188	0.16113

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.00036	0.00042
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.00036	0.00041

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)	0.89995	2.51244	12.99480
	QN->Q (FR)	0.14700	1.53858	13.99050
	SN->Q (FR)	0.79933	2.51812	16.14070
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.84940	2.49991	12.82930
	QN->Q (FR)	0.13852	1.51889	13.34840
	SN->Q (FR)	0.74345	2.50497	15.94110

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)	1.60366	3.68126	17.68910
	QN->Q (RF)	0.03646	0.60549	6.68444
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	1.55228	3.72087	17.70260
	QN->Q (RF)	0.03721	0.61984	6.67695

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)	1.43963	2.68084	11.20950
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	1.39068	2.63680	10.83610

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)	0.69104	1.24667	4.71367
	SN->QN (FF)	0.58199	1.26168	7.85826
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.65466	1.22469	4.74629
	SN->QN (FF)	0.54334	1.23619	7.85836

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)	-0.09137	-0.11199	-0.72003
	setup	CK (R)	0.60706	0.59900	1.24760
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.09323	-0.11258	-0.71635
	setup	CK (R)	0.61269	0.60418	1.25752

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)	-0.82841	-1.18967	-12.83720
	setup	CK (R)	0.95577	1.28723	12.97120
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.82895	-1.18836	-12.83570
	setup	CK (R)	0.96101	1.28863	12.97170

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)	-0.09137	-0.11199	-0.72003
	setup	CK (R)	0.60706	0.59900	1.24760
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.09323	-0.11258	-0.71635
	setup	CK (R)	0.61269	0.60418	1.25752

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)	-0.82841	-1.18967	-12.83720
	setup	CK (R)	0.95577	1.28723	12.97120
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.82895	-1.18836	-12.83570
	setup	CK (R)	0.96101	1.28863	12.97170

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)	0.08102	0.09778	0.56784
	removal	CK (R)	-0.02164	-0.04238	-0.33808
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.08134	0.09976	0.56497
	removal	CK (R)	-0.02164	-0.04238	-0.33808

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)	0.08102	0.09778	0.56784
	removal	CK (R)	-0.02164	-0.04238	-0.33808
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.08134	0.09976	0.56497
	removal	CK (R)	-0.02164	-0.04238	-0.33808

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 ()	0.55828	1.01895	13.33370
	min_pulse_width	SN ()	0.57412	1.01236	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.53967	0.97064	13.33370
	min_pulse_width	SN ()	0.53595	0.97064	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 ()	0.22346	0.50293	13.33370
	min_pulse_width	CK ()	0.86089	0.74667	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.21969	0.50293	13.33370
	min_pulse_width	CK ()	0.84813	0.73569	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 ()	1.07688	1.12435	13.33370
	min_pulse_width	CK ()	0.80115	1.07824	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	1.08325	1.12874	13.33370
	min_pulse_width	CK ()	0.80529	1.07824	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	0.00374	0.00356	0.00269
	SN	-0.00053	-0.01040	-0.07535
	SN	0.00782	0.00770	0.00684
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00336	0.00317	0.00249
	SN	-0.00053	-0.00963	-0.06631
	SN	0.00744	0.00732	0.00662

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	0.00411	0.00402	0.00377
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00374	0.00364	0.00343

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	0.00412	0.00402	0.00377
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00374	0.00364	0.00343

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	0.00372	0.00354	0.00248
	SN	-0.00053	-0.01050	-0.07662
	SN	0.00780	0.00768	0.00663
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00335	0.00316	0.00234
	SN	-0.00053	-0.00960	-0.06599
	SN	0.00742	0.00730	0.00649

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	-0.00098	-0.00101	-0.00100
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00424	0.00414	0.00397
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00161	0.00154	0.00143
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00098	-0.00101	-0.00100
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00424	0.00414	0.00397
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00161	0.00154	0.00143

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	0.00099	0.00101	0.00100
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00647	0.00639	0.00630
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00312	0.00304	0.00301
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00099	0.00101	0.00100
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00647	0.00639	0.00630
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00312	0.00304	0.00301

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)	-0.00193	-0.00194	-0.00194
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00127	0.00120	0.00108
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)	-0.00193	-0.00194	-0.00194
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00128	0.00120	0.00108

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)	0.00194	0.00196	0.00194
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00428	0.00411	0.00404
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)	0.00194	0.00196	0.00194
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00428	0.00411	0.00404

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)	-0.00024	-0.00037	-0.00053
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00019	-0.00034	-0.00049
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00140	0.00118	0.00090
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00024	-0.00037	-0.00053
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00019	-0.00034	-0.00049
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00140	0.00118	0.00090

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)	0.01126	0.01105	0.01070
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00602	0.00580	0.00571
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01129	0.01092	0.01068
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00609	0.00585	0.00577
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00756	0.00718	0.00706
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01126	0.01105	0.01070
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00602	0.00580	0.00571
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01129	0.01092	0.01068
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00609	0.00585	0.00577
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00756	0.00718	0.00706

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__dff_1	32.23440
sky130_osu_sc_12T_hs__dff_l	32.23440

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	D	CK	Q
sky130_osu_sc_12T_hs__dff_1	0.00258	0.00815	0.17744
sky130_osu_sc_12T_hs__dff_l	0.00258	0.00815	0.15768

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.00034	0.00036
sky130_osu_sc_12T_hs__dff_l	0.00000	0.00034	0.00035

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)	0.83966	2.07877	10.36240
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.78873	2.04448	10.14810

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)	1.45759	1.97557	5.54435
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	1.40751	1.94520	5.60725

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)	-0.10682	-0.12854	-0.81399
	setup	CK (R)	0.52366	0.51739	1.23892
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.10640	-0.12843	-0.81333
	setup	CK (R)	0.52646	0.52070	1.24810

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)	-0.83440	-1.21002	-12.91550
	setup	CK (R)	0.95209	1.32536	13.11280
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.83261	-1.20925	-12.91460
	setup	CK (R)	0.95323	1.32552	13.11310

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 ()	0.23196	0.51391	13.33370
	min_pulse_width	CK ()	0.86964	0.76204	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.22717	0.51171	13.33370
	min_pulse_width	CK ()	0.86309	0.75106	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 ()**	0.99140	1.05189	13.33370
	min_pulse_width	**CK ()**	0.77822	1.10459	13.33370
sky130_osu_sc_12T_hs__dff_l	**min_pulse_width**	**CK ()**	0.99553	1.05628	13.33370
	min_pulse_width	**CK ()**	0.78034	1.10459	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	0.00788	0.00757	0.00714
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00710	0.00680	0.00638

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	0.00840	0.00820	0.00791
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00765	0.00742	0.00715

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	-0.00094	-0.00097	-0.00097
	!CK	0.00000	0.00000	0.00000
	!CK	0.00388	0.00379	0.00363
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00094	-0.00097	-0.00097
	!CK	0.00000	0.00000	0.00000
	!CK	0.00388	0.00379	0.00363

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	0.00096	0.00097	0.00097
	!CK	0.00000	0.00000	0.00000
	!CK	0.00677	0.00665	0.00655
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00096	0.00097	0.00097
	!CK	0.00000	0.00000	0.00000
	!CK	0.00677	0.00665	0.00655

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)	-0.00026	-0.00039	-0.00055
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00019	-0.00034	-0.00049
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00026	-0.00039	-0.00055
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00019	-0.00034	-0.00049

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)	0.00600	0.00579	0.00570
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01086	0.01067	0.01033
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01149	0.01111	0.01085
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00605	0.00582	0.00574
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00600	0.00579	0.00570
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01086	0.01067	0.01034
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01149	0.01111	0.01086
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00605	0.00582	0.00573

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_12T_hs__inv_1	0.00251	0.17682
sky130_osu_sc_12T_hs__inv_10	0.02208	1.78051
sky130_osu_sc_12T_hs__inv_2	0.00461	0.36889
sky130_osu_sc_12T_hs__inv_3	0.00681	0.54633
sky130_osu_sc_12T_hs__inv_4	0.00895	0.73386
sky130_osu_sc_12T_hs__inv_6	0.01340	1.10963
sky130_osu_sc_12T_hs__inv_8	0.01774	1.48249
sky130_osu_sc_12T_hs__inv_l	0.00201	0.15456

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00004	0.00004
sky130_osu_sc_12T_hs__inv_10	0.00000	0.00036	0.00038
sky130_osu_sc_12T_hs__inv_2	0.00000	0.00007	0.00008
sky130_osu_sc_12T_hs__inv_3	0.00000	0.00011	0.00012
sky130_osu_sc_12T_hs__inv_4	0.00000	0.00014	0.00015
sky130_osu_sc_12T_hs__inv_6	0.00000	0.00021	0.00023
sky130_osu_sc_12T_hs__inv_8	0.00000	0.00029	0.00031
sky130_osu_sc_12T_hs__inv_l	0.00000	0.00003	0.00003

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)**	0.14593	1.50380	13.52770
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.10384	0.93804	13.53440
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.09688	1.25425	13.65680
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.09757	1.15533	13.66120
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.08835	1.09127	13.65080
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.08953	1.02016	13.72850
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.09520	0.97504	13.76500
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.14051	1.48999	12.90710

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)**	0.03373	0.57039	6.18369
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.03814	0.45222	6.29075
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.02639	0.52346	6.26413
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.02769	0.50630	6.30972
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.02682	0.48942	6.30767
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.02995	0.47000	6.34566
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.03373	0.46045	6.36279
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.03557	0.58847	6.24534

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	0.00186	0.00175	0.00180
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.01522	0.01498	0.01524
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00319	0.00311	0.00312
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00490	0.00478	0.00482
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00623	0.00607	0.00616
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.00926	0.00909	0.00921
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01226	0.01204	0.01222
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00149	0.00144	0.00144

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	-0.00025	-0.00026	-0.00028
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00440	-0.00451	-0.00438
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00086	-0.00091	-0.00092
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00107	-0.00113	-0.00115
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00171	-0.00178	-0.00179
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00257	-0.00268	-0.00266
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00347	-0.00358	-0.00352
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00017	-0.00019	-0.00020

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__mux2_1	12.21000

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	**A1**	**S0**	**Y**
sky130_osu_sc_12T_hs__mux2_1	0.16511	0.16552	0.00519	0.17531

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.00012	0.00012

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)	-	0.05689	0.84325	9.12873
	A1->Y (RR)	-	0.07536	0.86346	9.13959
	S0->Y (RR)	(!A0 * A1)	0.13228	1.02838	8.76728
	S0->Y (FR)	(A0 * !A1)	0.14688	1.31837	10.49490

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)	-	0.03703	0.56867	6.28102
	A1->Y (FF)	-	0.02934	0.55895	6.26372
	S0->Y (FF)	(!A0 * A1)	0.31993	0.95064	7.54813
	S0->Y (RF)	(A0 * !A1)	0.03621	0.57313	6.02843

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	-	-0.00186	-0.00187	-0.00187
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00123	-0.00123	-0.00124
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00265	0.00248	0.00244
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00108	-0.00123	-0.00134

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	-	0.00186	0.00187	0.00187
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00123	0.00123	0.00124
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00038	0.00025	0.00013
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00493	0.00476	0.00470

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)	-0.00050	-0.00050	-0.00050

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)	0.00050	0.00050	0.00050

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)	-0.00060	-0.00060	-0.00060

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)	0.00060	0.00060	0.00060

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)	-0.00035	-0.00050	-0.00061
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00035	-0.00049	-0.00060

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)	0.00383	0.00366	0.00361
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00375	0.00358	0.00354

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nand2_1	6.34920
sky130_osu_sc_12T_hs__nand2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nand2_1	0.00249	0.00248	0.18237
sky130_osu_sc_12T_hs__nand2_l	0.00196	0.00198	0.15459

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00005	0.00008
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.00005	0.00007

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)	0.15380	1.51994	13.76040
	B->Y (FR)	0.17726	1.52512	13.54990
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.14285	1.49313	12.92400
	B->Y (FR)	0.16772	1.51876	12.94080

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)	0.05707	0.70988	7.32486
	B->Y (RF)	0.06317	0.70013	7.01445
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.05740	0.72865	7.28697
	B->Y (RF)	0.06295	0.71911	6.99149

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	0.00195	0.00181	0.00188
	B	0.00000	0.00000	0.00000
	B	0.00237	0.00230	0.00230
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00149	0.00144	0.00142
	B	0.00000	0.00000	0.00000
	B	0.00180	0.00176	0.00175

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	-0.00013	-0.00016	-0.00017
	B	0.00000	0.00000	0.00000
	B	-0.00012	-0.00014	-0.00016
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00008	-0.00010	-0.00011
	B	0.00000	0.00000	0.00000
	B	-0.00008	-0.00009	-0.00010

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)	-0.00117	-0.00117	-0.00118
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00082	-0.00083	-0.00083

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)	0.00117	0.00118	0.00118
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00084	0.00084	0.00083

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)	-0.00107	-0.00108	-0.00108
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00077	-0.00077	-0.00077

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)	0.00107	0.00109	0.00108
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00077	0.00078	0.00077

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__nor2_1	6.34920
sky130_osu_sc_12T_hs__nor2_l	6.34920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__nor2_1	0.00242	0.00273	0.07858
sky130_osu_sc_12T_hs__nor2_l	0.00186	0.00209	0.06739

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00005	0.00007
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.00004	0.00007

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)	0.41827	2.21607	14.37920
	B->Y (FR)	0.37924	2.10103	13.93290
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.38755	2.19208	13.95630
	B->Y (FR)	0.35971	2.08426	13.19020

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)	0.03689	0.50193	4.90717
	B->Y (RF)	0.03518	0.49667	4.89050
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.03757	0.51160	4.87168
	B->Y (RF)	0.03630	0.50721	4.85859

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	0.00229	0.00223	0.00205
	B	0.00000	0.00000	0.00000
	B	0.00203	0.00194	0.00192
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00170	0.00166	0.00165
	B	0.00000	0.00000	0.00000
	B	0.00155	0.00148	0.00145

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	0.00011	0.00006	0.00001
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00021	-0.00026
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00011	0.00007	0.00004
	B	0.00000	0.00000	0.00000
	B	-0.00013	-0.00013	-0.00017

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)	-0.00095	-0.00098	-0.00098
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00065	-0.00066	-0.00066

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)	0.00097	0.00098	0.00098
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00066	0.00066	0.00066

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)	-0.00064	-0.00065	-0.00064
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00044	-0.00044	-0.00044

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)	0.00065	0.00066	0.00065
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00045	0.00045	0.00044

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__oai21_l	0.00247	0.00254	0.00221	0.07660

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.00005	0.00008

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)	0.52177	2.20194	13.91160
	A1->Y (FR)	0.58079	2.36508	14.40830
	B0->Y (FR)	0.18047	1.19747	9.69631

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)	0.07414	0.59399	5.34142
	A1->Y (RF)	0.07898	0.59649	5.34779
	B0->Y (RF)	0.06247	0.60304	5.58788

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	0.00263	0.00246	0.00252
	A1	0.00000	0.00000	0.00000
	A1	0.00294	0.00288	0.00284
	B0	0.00203	0.00194	0.00191

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	0.00018	0.00018	0.00014
	A1	0.00000	0.00000	0.00000
	A1	0.00053	0.00048	0.00044
	B0	0.00074	0.00072	0.00067

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)	-0.00065	-0.00066	-0.00065
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00098	-0.00100	-0.00100
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00103	-0.00103	-0.00103

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)	0.00065	0.00066	0.00065
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00099	0.00100	0.00100
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00103	0.00104	0.00103

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)	-0.00092	-0.00095	-0.00094
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00096	-0.00100	-0.00099
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00101	-0.00102	-0.00101

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)	0.00094	0.00095	0.00094
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00098	0.00100	0.00099
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00101	0.00103	0.00102

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)	-0.00086	-0.00087	-0.00089

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)	0.00089	0.00090	0.00089

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai22_l	10.25640

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_12T_hs__oai22_l	0.00228	0.00243	0.00263	0.00256	0.07777

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00008	0.00011

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__oai22_l	A0->Y (FR)	0.62786	2.40756	14.45840
	A1->Y (FR)	0.57754	2.29199	13.97090
	B0->Y (FR)	0.39992	2.09763	13.77270
	B1->Y (FR)	0.45946	2.22563	14.26850

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)	0.09344	0.62262	5.41534
	A1->Y (RF)	0.08352	0.61059	5.39104
	B0->Y (RF)	0.07147	0.61776	5.64127
	B1->Y (RF)	0.08257	0.63170	5.68115

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	0.00355	0.00349	0.00346
	A1	0.00324	0.00316	0.00313
	B0	0.00244	0.00233	0.00231
	B1	0.00278	0.00270	0.00266

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00065	0.00060	0.00054
	A1	0.00032	0.00033	0.00027
	B0	0.00032	0.00032	0.00026
	B1	0.00066	0.00061	0.00054

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)	-0.00093	-0.00096	-0.00095
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00093	-0.00096	-0.00095
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00093	-0.00096	-0.00095
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00097	-0.00098	-0.00098

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)	0.00095	0.00096	0.00095
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00095	0.00096	0.00095
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00095	0.00096	0.00095
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00098	0.00099	0.00098

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)	-0.00063	-0.00064	-0.00063
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00063	-0.00064	-0.00063
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00093	-0.00095	-0.00094
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00097	-0.00098	-0.00098

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00064	0.00065	0.00063
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00064	0.00065	0.00063
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00094	0.00095	0.00094
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00098	0.00098	0.00098

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)	-0.00063	-0.00065	-0.00064
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00063	-0.00064	-0.00064
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00111	-0.00114	-0.00113
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00112	-0.00113	-0.00116

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)	0.00064	0.00065	0.00064
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00064	0.00065	0.00064
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00113	0.00114	0.00113
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00116	0.00117	0.00117

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)	-0.00093	-0.00095	-0.00094
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00093	-0.00095	-0.00094
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00114	-0.00117	-0.00116
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00115	-0.00115	-0.00119

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)	0.00094	0.00096	0.00094
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00094	0.00095	0.00094
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00116	0.00117	0.00116
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00119	0.00121	0.00119

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

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

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__or2_1	0.00276	0.00257	0.18242
sky130_osu_sc_12T_hs__or2_2	0.00275	0.00257	0.37377
sky130_osu_sc_12T_hs__or2_4	0.00275	0.00256	0.72647
sky130_osu_sc_12T_hs__or2_8	0.00276	0.00257	1.47098
sky130_osu_sc_12T_hs__or2_l	0.00210	0.00198	0.15857

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00008	0.00010
sky130_osu_sc_12T_hs__or2_2	0.00000	0.00011	0.00014
sky130_osu_sc_12T_hs__or2_4	0.00000	0.00018	0.00022
sky130_osu_sc_12T_hs__or2_8	0.00000	0.00032	0.00037
sky130_osu_sc_12T_hs__or2_l	0.00000	0.00008	0.00010

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__or2_1	A->Y (RR)	0.21125	1.46445	9.86993
	B->Y (RR)	0.20447	1.45177	9.77331
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.19299	1.25660	10.12700
	B->Y (RR)	0.18487	1.24328	10.04300
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.23824	1.15790	10.34720
	B->Y (RR)	0.23003	1.14796	10.28910
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.34091	1.17014	11.04000
	B->Y (RR)	0.33258	1.16283	11.00620
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.19731	1.44652	9.36745
	B->Y (RR)	0.19159	1.43162	9.27215

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)	0.77228	1.47808	8.49731
	B->Y (FF)	0.68734	1.33943	7.98999
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	1.00034	1.72669	8.94987
	B->Y (FF)	0.91536	1.58914	8.51421
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	1.49404	2.26720	9.69130
	B->Y (FF)	1.40847	2.12647	9.30323
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	2.47720	3.34197	11.09060
	B->Y (FF)	2.39062	3.19624	10.64330
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.68021	1.39009	8.18924
	B->Y (FF)	0.61045	1.25440	7.46626

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	0.00187	0.00179	0.00166
	B	0.00000	0.00000	0.00000
	B	0.00153	0.00148	0.00134
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00315	0.00314	0.00301
	B	0.00000	0.00000	0.00000
	B	0.00279	0.00284	0.00271
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00609	0.00622	0.00617
	B	0.00000	0.00000	0.00000
	B	0.00573	0.00594	0.00588
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01193	0.01227	0.01246
	B	0.00000	0.00000	0.00000
	B	0.01156	0.01201	0.01227
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00148	0.00142	0.00132
	B	0.00000	0.00000	0.00000
	B	0.00123	0.00118	0.00109

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	0.00418	0.00410	0.00407
	B	0.00000	0.00000	0.00000
	B	0.00372	0.00368	0.00362
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00512	0.00518	0.00516
	B	0.00000	0.00000	0.00000
	B	0.00466	0.00475	0.00471
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00749	0.00778	0.00785
	B	0.00000	0.00000	0.00000
	B	0.00702	0.00732	0.00739
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01225	0.01282	0.01332
	B	0.00000	0.00000	0.00000
	B	0.01176	0.01236	0.01282
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00318	0.00311	0.00307
	B	0.00000	0.00000	0.00000
	B	0.00285	0.00280	0.00276

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)	-0.00097	-0.00099	-0.00099
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00097	-0.00099	-0.00099
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00097	-0.00099	-0.00099
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00097	-0.00100	-0.00099
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00065	-0.00067	-0.00067

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)	0.00098	0.00099	0.00099
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00098	0.00099	0.00099
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00098	0.00099	0.00099
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00098	0.00100	0.00099
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00066	0.00067	0.00067

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)	-0.00065	-0.00065	-0.00065
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00065	-0.00065	-0.00065
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00065	-0.00065	-0.00065
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00065	-0.00065	-0.00065
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00043	-0.00043	-0.00043

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)	0.00066	0.00066	0.00065
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00066	0.00067	0.00065
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00066	0.00067	0.00065
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00066	0.00067	0.00065
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00044	0.00045	0.00043

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tbufi_1	8.30280
sky130_osu_sc_12T_hs__tbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tbufi_1	0.00270	0.00353	0.07888
sky130_osu_sc_12T_hs__tbufi_l	0.00210	0.00275	0.06734

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00006	0.00008
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.00006	0.00007

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)	0.35386	2.06089	13.83330
	OE->Y (FR)	0.21496	0.68326	6.00852
	OE->Y (RR)	0.39839	2.01629	10.15380
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.34458	2.06851	13.17270
	OE->Y (FR)	0.18095	0.63033	5.34521
	OE->Y (RR)	0.37712	2.01850	9.73668

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)	0.05512	0.58910	5.53406
	OE->Y (FF)	0.21644	0.68381	6.01093
	OE->Y (RF)	0.05365	0.56916	5.34019
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.05603	0.59894	5.47617
	OE->Y (FF)	0.18149	0.63047	5.34693
	OE->Y (RF)	0.05436	0.57935	5.29246

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	0.00188	0.00179	0.00176
	OE	0.00000	0.00000	0.00000
	OE	0.00162	0.00149	0.00139
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00144	0.00137	0.00133
	OE	0.00000	0.00000	0.00000
	OE	0.00123	0.00112	0.00105

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00022	-0.00021	-0.00026
	OE	0.00000	0.00000	0.00000
	OE	0.00122	0.00108	0.00098
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00013	-0.00012	-0.00016
	OE	0.00000	0.00000	0.00000
	OE	0.00086	0.00075	0.00068

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)	-0.00098	-0.00098	-0.00098
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00094	-0.00095	-0.00094
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00070	-0.00070	-0.00070
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00067	-0.00067	-0.00067

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)	0.00098	0.00098	0.00098
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00095	0.00096	0.00095
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00070	0.00070	0.00070
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00068	0.00069	0.00067

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)	0.00066	0.00051	0.00043
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00060	0.00045	0.00036
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00046	0.00036	0.00029
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00040	0.00030	0.00023

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)	0.00224	0.00207	0.00202
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00231	0.00214	0.00207
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00172	0.00158	0.00154
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00178	0.00165	0.00159

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__tnbufi_1	8.30280
sky130_osu_sc_12T_hs__tnbufi_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_12T_hs__tnbufi_1	0.00270	0.00391	0.07925
sky130_osu_sc_12T_hs__tnbufi_l	0.00200	0.00300	0.06664

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.00006	0.00007
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.00006	0.00007

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)	0.35620	2.06383	13.86550
	OE->Y (RR)	0.03960	0.32170	3.77690
	OE->Y (FR)	0.35967	2.15445	14.31930
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.33716	2.05310	13.08760
	OE->Y (RR)	0.04024	0.31608	3.77662
	OE->Y (FR)	0.34219	2.14467	13.84240

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)	0.05333	0.58871	5.54154
	OE->Y (RF)	0.03895	0.32150	3.77691
	OE->Y (FF)	0.22987	0.87786	6.93165
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.05227	0.59585	5.45477
	OE->Y (RF)	0.04005	0.31436	3.77662
	OE->Y (FF)	0.21740	0.85631	6.40681

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	0.00196	0.00187	0.00184
	OE	0.00000	0.00000	0.00000
	OE	0.00439	0.00425	0.00422
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00148	0.00141	0.00138
	OE	0.00000	0.00000	0.00000
	OE	0.00341	0.00330	0.00328

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	-0.00031	-0.00031	-0.00035
	OE	0.00000	0.00000	0.00000
	OE	0.00404	0.00391	0.00388
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00023	-0.00023	-0.00026
	OE	0.00000	0.00000	0.00000
	OE	0.00311	0.00299	0.00296

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)	-0.00082	-0.00083	-0.00082
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00078	-0.00079	-0.00078
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00055	-0.00055	-0.00055
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00052	-0.00053	-0.00052

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)	0.00082	0.00083	0.00082
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00079	0.00080	0.00079
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00055	0.00055	0.00055
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00054	0.00054	0.00053

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)	-0.00111	-0.00130	-0.00139
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00108	-0.00126	-0.00137
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00076	-0.00089	-0.00097
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00073	-0.00087	-0.00096

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)	0.00342	0.00330	0.00325
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00336	0.00323	0.00320
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00267	0.00256	0.00252
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00262	0.00251	0.00249

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xnor2_l	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xnor2_l	0.00540	0.00448	0.07790

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.00016	0.00017

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (RR)	B	0.53073	2.14055	10.28730
	A->Y (FR)	!B	0.47012	2.18315	13.84280
	B->Y (RR)	A	0.46534	2.07278	10.17030
	B->Y (FR)	!A	0.49963	2.27298	14.28860

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xnor2_l	A->Y (FF)	B	0.35571	1.00508	7.35252
	A->Y (RF)	!B	0.07590	0.58935	5.34394
	B->Y (FF)	A	0.34598	0.99582	7.32783
	B->Y (RF)	!A	0.07935	0.59292	5.35724

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	0.00162	0.00148	0.00132
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00471	0.00446	0.00438
	B	A	0.00000	0.00000	0.00000
	B	A	0.00106	0.00094	0.00080
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00466	0.00448	0.00443

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	0.00538	0.00523	0.00511
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00128	0.00116	0.00101
	B	A	0.00000	0.00000	0.00000
	B	A	0.00501	0.00492	0.00485
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00154	0.00138	0.00123

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__xor2_1	14.16360

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_12T_hs__xor2_1	0.00539	0.00452	0.07611

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.00016	0.00018

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (RR)	!B	0.58748	2.19221	10.28040
	A->Y (FR)	B	0.49060	2.25174	14.22860
	B->Y (RR)	!A	0.48063	2.09414	10.14050
	B->Y (FR)	A	0.52812	2.30747	14.29260

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_12T_hs__xor2_l	A->Y (FF)	!B	0.37399	1.01688	7.35496
	A->Y (RF)	B	0.06684	0.60134	5.50888
	B->Y (FF)	!A	0.35846	1.00436	7.32633
	B->Y (RF)	A	0.07211	0.58678	5.32282

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	0.00530	0.00506	0.00498
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00117	0.00095	0.00078
	B	A	0.00000	0.00000	0.00000
	B	A	0.00521	0.00503	0.00497
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00099	0.00085	0.00071

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	0.00097	0.00080	0.00062
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00579	0.00566	0.00560
	B	A	0.00000	0.00000	0.00000
	B	A	0.00098	0.00081	0.00066
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00510	0.00501	0.00494

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ss_1P28_-40C.ccs
Cell Library: Process , Voltage 1.28, Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__ant	4.39560
sky130_osu_sc_12T_hs__tiehi	4.39560
sky130_osu_sc_12T_hs__tielo	4.39560

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_12T_hs__ant	0.02407
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	13107.50000	26215.00000
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
	-0.00120	0.00026	0.01827

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_12T_hs__ant	0.00000	0.00000	0.00000
	0.22914	0.21539	0.03047