sky130_osu_sc_12T_hs_ff_1P56_-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_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.01015	0.01020	0.00794	1.25648	0.54090	1.09286
sky130_osu_sc_12T_hs__addf_l	0.01017	0.01020	0.00795	0.85620	0.54197	1.08958

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addf_1	0.00000	0.03377	0.04365
sky130_osu_sc_12T_hs__addf_l	0.00000	0.14087	0.25827

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)	0.10218	1.28679	19.74600
	B->CO (RR)	0.09563	1.24219	19.21020
	CI->CO (RR)	0.09597	1.31340	20.36990
	CON->CO (FR)	0.02229	0.70302	11.67040
sky130_osu_sc_12T_hs__addf_l	A->CO (RR)	0.10081	1.17659	15.78760
	B->CO (RR)	0.09465	1.15023	15.66070
	CI->CO (RR)	0.09463	1.20538	16.44940
	CON->CO (FR)	0.02598	0.72535	10.90590

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CO (FF)	0.18798	1.96556	29.71200
	B->CO (FF)	0.16586	1.86873	28.48180
	CI->CO (FF)	0.16443	1.92801	29.57940
	CON->CO (RF)	0.01421	0.40833	6.73027
sky130_osu_sc_12T_hs__addf_l	A->CO (FF)	0.18745	1.75951	23.28090
	B->CO (FF)	0.16505	1.67671	22.41850
	CI->CO (FF)	0.16368	1.72270	23.17210
	CON->CO (RF)	0.01582	0.42664	6.44529

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->CON (FR)	0.16407	0.99861	11.56390
	B->CON (FR)	0.14065	0.93752	11.16330
	CI->CON (FR)	0.14030	0.96342	11.48980
sky130_osu_sc_12T_hs__addf_l	A->CON (FR)	0.15627	0.99205	11.57020
	B->CON (FR)	0.13357	0.93141	11.17010
	CI->CON (FR)	0.13251	0.95691	11.49630

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)	0.05592	0.39049	4.48642
	B->CON (RF)	0.05157	0.40000	4.68125
	CI->CON (RF)	0.04972	0.42089	5.03759
sky130_osu_sc_12T_hs__addf_l	A->CON (RF)	0.05456	0.38924	4.49074
	B->CON (RF)	0.05030	0.39883	4.68569
	CI->CON (RF)	0.04835	0.41960	5.04208

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-R)	0.27160	1.84124	23.80330
	B->S (-R)	0.26100	1.80150	23.04400
	CI->S (-R)	0.24604	1.80038	23.67240
	CON->S (RR)	0.06355	0.57387	6.35429
sky130_osu_sc_12T_hs__addf_l	A->S (-R)	0.26223	1.83226	23.73930
	B->S (-R)	0.25199	1.79281	22.98170
	CI->S (-R)	0.23659	1.79163	23.60760
	CON->S (RR)	0.06358	0.57303	6.33267

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__addf_1	A->S (-F)	0.18029	1.03846	12.09800
	B->S (-F)	0.17550	0.99901	11.98210
	CI->S (-F)	0.17374	1.06393	12.73420
	CON->S (FF)	0.08417	0.54114	5.57515
sky130_osu_sc_12T_hs__addf_l	A->S (-F)	0.17680	1.03490	12.06680
	B->S (-F)	0.17232	0.99483	11.95430
	CI->S (-F)	0.17018	1.06034	12.70480
	CON->S (FF)	0.08418	0.54104	5.56388

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	0.00174	0.00184	0.00472
	B	0.00244	0.00248	0.00483
	CI	0.00243	0.00258	0.00542
sky130_osu_sc_12T_hs__addf_l	A	0.00158	0.00167	0.00396
	B	0.00185	0.00195	0.00380
	CI	0.00227	0.00240	0.00493

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00602	0.00630	0.01516
	B	0.00625	0.00650	0.01421
	CI	0.00514	0.00547	0.01459
sky130_osu_sc_12T_hs__addf_l	A	0.00587	0.00606	0.01177
	B	0.00610	0.00627	0.01113
	CI	0.00501	0.00522	0.01130

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00601	0.00613	0.00965
	B	0.00628	0.00634	0.00948
	CI	0.00514	0.00530	0.00931
sky130_osu_sc_12T_hs__addf_l	A	0.00587	0.00599	0.00941
	B	0.00614	0.00618	0.00926
	CI	0.00535	0.00557	0.00889

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00207	0.00199	0.00321
	B	0.00200	0.00204	0.00331
	CI	0.00242	0.00253	0.00424
sky130_osu_sc_12T_hs__addf_l	A	0.00191	0.00183	0.00321
	B	0.00185	0.00189	0.00332
	CI	0.00227	0.00238	0.00430

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.00602	0.00627	0.01391
	B	0.00625	0.00649	0.01304
	CI	0.00514	0.00547	0.01339
sky130_osu_sc_12T_hs__addf_l	A	0.00587	0.00611	0.01351
	B	0.00611	0.00633	0.01271
	CI	0.00501	0.00528	0.01302

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addf_1	A	0.01299	0.01293	0.01677
	B	0.01193	0.01158	0.01957
	CI	0.01071	0.01051	0.01430
sky130_osu_sc_12T_hs__addf_l	A	0.01300	0.01293	0.01677
	B	0.01195	0.01158	0.01954
	CI	0.01072	0.01053	0.01431

SKY130_OSU_SC_12T_HS__ADDHx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__addh_1	18.55920
sky130_osu_sc_12T_hs__addh_l	18.55920

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_12T_hs__addh_1	0.00510	0.00536	1.18925	1.22554	1.25171
sky130_osu_sc_12T_hs__addh_l	0.00495	0.00528	0.86057	1.23394	0.87247

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__addh_1	0.00000	0.03947	0.04213
sky130_osu_sc_12T_hs__addh_l	0.00000	0.25451	0.25724

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)	0.08465	0.62771	6.80317
	B->CO (RR)	0.08752	0.63659	6.92661
sky130_osu_sc_12T_hs__addh_l	A->CO (RR)	0.07033	0.58945	5.83481
	B->CO (RR)	0.07260	0.59191	5.90979

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)	0.07777	0.58306	6.28522
	B->CO (FF)	0.08224	0.59534	6.33235
sky130_osu_sc_12T_hs__addh_l	A->CO (FF)	0.06946	0.54390	5.71912
	B->CO (FF)	0.07374	0.55507	5.75104

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)	0.12105	0.64743	6.78350
	B->CON (RR)	0.12388	0.65544	6.90543
sky130_osu_sc_12T_hs__addh_l	A->CON (RR)	0.09843	0.55847	5.95188
	B->CON (RR)	0.10062	0.55862	6.03204

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)	0.10282	0.60207	6.37852
	B->CON (FF)	0.10261	0.60987	6.41822
sky130_osu_sc_12T_hs__addh_l	A->CON (FF)	0.08479	0.52861	5.84983
	B->CON (FF)	0.08519	0.53587	5.86627

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)	0.14613	1.27971	16.95260
	B->S (FR)	0.14617	1.28973	17.03970
	CON->S (FR)	0.02454	0.71326	11.81610
sky130_osu_sc_12T_hs__addh_l	A->S (FR)	0.12399	1.11693	13.32590
	B->S (FR)	0.12475	1.12511	13.35630
	CON->S (FR)	0.02672	0.73223	11.06620

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)	0.15438	1.21682	15.69710
	B->S (RF)	0.15710	1.22467	15.82100
	CON->S (RF)	0.01652	0.48864	8.14930
sky130_osu_sc_12T_hs__addh_l	A->S (RF)	0.12556	0.93053	10.04270
	B->S (RF)	0.12770	0.92918	10.12110
	CON->S (RF)	0.01538	0.43138	6.56062

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	0.00330	0.00312	0.00384
	B	0.00000	0.00000	0.00000
	B	0.00307	0.00290	0.00356
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00284	0.00269	0.00575
	B	0.00000	0.00000	0.00000
	B	0.00262	0.00243	0.00574

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	0.00449	0.00431	0.00568
	B	0.00000	0.00000	0.00000
	B	0.00473	0.00476	0.00509
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00405	0.00397	0.00774
	B	0.00000	0.00000	0.00000
	B	0.00428	0.00440	0.00814

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	0.00330	0.00312	0.00382
	B	0.00000	0.00000	0.00000
	B	0.00307	0.00290	0.00355
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00284	0.00269	0.00558
	B	0.00000	0.00000	0.00000
	B	0.00262	0.00243	0.00559

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	0.00448	0.00431	0.00565
	B	0.00000	0.00000	0.00000
	B	0.00473	0.00476	0.00614
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00405	0.00396	0.00768
	B	0.00000	0.00000	0.00000
	B	0.00428	0.00440	0.00807

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	0.00449	0.00432	0.00573
	B	0.00000	0.00000	0.00000
	B	0.00473	0.00477	0.00619
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00405	0.00397	0.00778
	B	0.00000	0.00000	0.00000
	B	0.00429	0.00440	0.00817

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	0.00330	0.00312	0.00387
	B	0.00000	0.00000	0.00000
	B	0.00307	0.00290	0.00362
sky130_osu_sc_12T_hs__addh_l	A	0.00000	0.00000	0.00000
	A	0.00285	0.00269	0.00551
	B	0.00000	0.00000	0.00000
	B	0.00262	0.00243	0.00556

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.00745	0.96683	0.27727
sky130_osu_sc_12T_hs__addh_l	(!B * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!B * !CO * !CON * S)	1.00972	0.96904	0.27783

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__addh_1	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.00725	0.96540	0.26428
sky130_osu_sc_12T_hs__addh_l	(!A * !CO * !CON * S)	0.00000	0.00000	0.00000
	(!A * !CO * !CON * S)	1.00955	0.96760	0.26469

SKY130_OSU_SC_12T_HS__AND2x

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00267	0.00279	1.20119
sky130_osu_sc_12T_hs__and2_2	0.00268	0.00279	2.38338
sky130_osu_sc_12T_hs__and2_4	0.00267	0.00279	4.60078
sky130_osu_sc_12T_hs__and2_6	0.00270	0.00279	6.80330
sky130_osu_sc_12T_hs__and2_8	0.00267	0.00279	8.89664
sky130_osu_sc_12T_hs__and2_l	0.00211	0.00219	0.86516

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__and2_1	0.00000	0.01791	0.02854
sky130_osu_sc_12T_hs__and2_2	0.00000	0.02854	0.02914
sky130_osu_sc_12T_hs__and2_4	0.00000	0.04979	0.05648
sky130_osu_sc_12T_hs__and2_6	0.00000	0.07105	0.08442
sky130_osu_sc_12T_hs__and2_8	0.00000	0.09230	0.11237
sky130_osu_sc_12T_hs__and2_l	0.00000	0.28591	0.45740

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)	0.05461	0.50091	5.87147
	B->Y (RR)	0.05811	0.50695	5.81342
sky130_osu_sc_12T_hs__and2_2	A->Y (RR)	0.06014	0.43425	5.91815
	B->Y (RR)	0.06361	0.43662	5.87060
sky130_osu_sc_12T_hs__and2_4	A->Y (RR)	0.08150	0.42539	6.11839
	B->Y (RR)	0.08494	0.42240	6.07736
sky130_osu_sc_12T_hs__and2_6	A->Y (RR)	0.10281	0.44414	6.29896
	B->Y (RR)	0.10622	0.43685	6.26714
sky130_osu_sc_12T_hs__and2_8	A->Y (RR)	0.12352	0.46968	6.47405
	B->Y (RR)	0.12692	0.45962	6.43883
sky130_osu_sc_12T_hs__and2_1	A->Y (RR)	0.05817	0.56067	6.17275
	B->Y (RR)	0.06169	0.56578	6.05743

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)**	0.05493	0.47090	5.38866
	B->Y (FF)	0.05704	0.48107	5.41883
sky130_osu_sc_12T_hs__and2_2	**A->Y (FF)**	0.06396	0.46117	5.53045
	B->Y (FF)	0.06534	0.46693	5.55706
sky130_osu_sc_12T_hs__and2_4	**A->Y (FF)**	0.08967	0.49094	5.79794
	B->Y (FF)	0.08882	0.49166	5.81902
sky130_osu_sc_12T_hs__and2_6	**A->Y (FF)**	0.11690	0.52651	6.01502
	B->Y (FF)	0.11385	0.52395	6.03220
sky130_osu_sc_12T_hs__and2_8	**A->Y (FF)**	0.14237	0.55739	6.15778
	B->Y (FF)	0.13735	0.55057	6.16173
sky130_osu_sc_12T_hs__and2_1	**A->Y (FF)**	0.05537	0.46064	4.92541
	B->Y (FF)	0.06077	0.47592	4.94605

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	0.00209	0.00195	0.01367
	B	0.00000	0.00000	0.00000
	B	0.00214	0.00181	0.00839
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00389	0.00389	0.01556
	B	0.00000	0.00000	0.00000
	B	0.00393	0.00381	0.00986
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.00800	0.00833	0.01924
	B	0.00000	0.00000	0.00000
	B	0.00804	0.00822	0.01485
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01223	0.01277	0.02273
	B	0.00000	0.00000	0.00000
	B	0.01231	0.01272	0.01903
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01651	0.01714	0.02640
	B	0.00000	0.00000	0.00000
	B	0.01651	0.01706	0.02282
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00168	0.00175	0.01983
	B	0.00000	0.00000	0.00000
	B	0.00171	0.00158	0.01431

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	0.00547	0.00573	0.01618
	B	0.00000	0.00000	0.00000
	B	0.00625	0.00652	0.01622
sky130_osu_sc_12T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00695	0.00743	0.01776
	B	0.00000	0.00000	0.00000
	B	0.00775	0.00818	0.01781
sky130_osu_sc_12T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01065	0.01151	0.02169
	B	0.00000	0.00000	0.00000
	B	0.01146	0.01217	0.02166
sky130_osu_sc_12T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.01461	0.01570	0.02583
	B	0.00000	0.00000	0.00000
	B	0.01534	0.01629	0.02568
sky130_osu_sc_12T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.01865	0.01975	0.02991
	B	0.00000	0.00000	0.00000
	B	0.01936	0.02050	0.02958
sky130_osu_sc_12T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00430	0.00503	0.02170
	B	0.00000	0.00000	0.00000
	B	0.00488	0.00542	0.02153

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00181	-0.00184	-0.00184
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00182	-0.00184	-0.00184
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00182	-0.00184	-0.00184
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00183	-0.00186	-0.00186
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00181	-0.00183	-0.00184
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00130	-0.00132	-0.00132

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00185	0.00184
sky130_osu_sc_12T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00185	0.00184
sky130_osu_sc_12T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00185	0.00184
sky130_osu_sc_12T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00185	0.00187	0.00186
sky130_osu_sc_12T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00183	0.00184	0.00184
sky130_osu_sc_12T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00132	0.00133	0.00133

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)	-0.00171	-0.00172	-0.00171
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00171	-0.00172	-0.00172
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00171	-0.00173	-0.00172
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00171	-0.00172	-0.00171
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00171	-0.00173	-0.00171
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00123	-0.00124	-0.00123

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)	0.00176	0.00174	0.00172
sky130_osu_sc_12T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00176	0.00175	0.00172
sky130_osu_sc_12T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00175	0.00174	0.00172
sky130_osu_sc_12T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00175	0.00174	0.00172
sky130_osu_sc_12T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00176	0.00173	0.00172
sky130_osu_sc_12T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	0.00126	0.00126	0.00124

SKY130_OSU_SC_12T_HS__AOI21

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00243	0.00261	0.00261	0.51848

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__aoi21_l	0.00000	0.00694	0.01397

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)	0.08259	0.93460	11.51770
	A1->Y (FR)	0.06507	0.85019	10.81520
	B0->Y (FR)	0.06401	0.90701	11.54460

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__aoi21_l	A0->Y (RF)	0.02706	0.35069	4.26954
	A1->Y (RF)	0.02421	0.36257	4.51950
	B0->Y (RF)	0.01880	0.36509	4.68771

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	0.00449	0.00441	0.00491
	A1	0.00000	0.00000	0.00000
	A1	0.00371	0.00361	0.00410
	B0	0.00282	0.00272	0.00447

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	0.00092	0.00079	0.00128
	A1	0.00000	0.00000	0.00000
	A1	0.00095	0.00086	0.00158
	B0	-0.00033	-0.00035	0.00024

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)	-0.00131	-0.00145	-0.00144
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00147	-0.00148	-0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00147	-0.00147	-0.00147

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)	0.00143	0.00145	0.00144
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00147	0.00149	0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00151	0.00149	0.00147

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)	-0.00132	-0.00145	-0.00145
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00147	-0.00148	-0.00147
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00164	-0.00165	-0.00166

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)	0.00144	0.00145	0.00145
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00147	0.00148	0.00148
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00166	0.00168	0.00166

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)	-0.00074	-0.00074	-0.00074

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)	0.00081	0.00081	0.00076

SKY130_OSU_SC_12T_HS__AOI22

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00243	0.00261	0.00273	0.00255	0.50361

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__aoi22_l	0.00000	0.00797	0.02794

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)	0.10618	0.95505	11.39370
	A1->Y (FR)	0.09429	0.93786	11.32820
	B0->Y (FR)	0.06705	0.90179	11.36550
	B1->Y (FR)	0.07940	0.91853	11.44100

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)	0.03418	0.35654	4.19590
	A1->Y (RF)	0.03131	0.37100	4.44156
	B0->Y (RF)	0.02039	0.35509	4.42240
	B1->Y (RF)	0.02350	0.34111	4.17864

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	0.00534	0.00526	0.00577
	A1	0.00457	0.00444	0.00494
	B0	0.00303	0.00294	0.00516
	B1	0.00384	0.00385	0.00603

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	A0	0.00182	0.00169	0.00218
	A1	0.00185	0.00171	0.00249
	B0	-0.00018	-0.00019	0.00061
	B1	-0.00015	-0.00019	0.00033

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)	-0.00134	-0.00144	-0.00144
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00147	-0.00147	-0.00147
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00146	-0.00147	-0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00146	-0.00147	-0.00147

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)	0.00143	0.00145	0.00144
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00147	0.00147	0.00147
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00151	0.00149	0.00147
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00151	0.00149	0.00147

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00135	-0.00145	-0.00144
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00147	-0.00147	-0.00147
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00163	-0.00164	-0.00165
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00163	-0.00164	-0.00165

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)	0.00144	0.00145	0.00144
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00147	0.00147	0.00148
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00165	0.00167	0.00166
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00165	0.00167	0.00166

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)	-0.00073	-0.00074	-0.00073
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00073	-0.00073	-0.00073
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00172	-0.00174	-0.00174
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00172	-0.00174	-0.00174

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)	0.00084	0.00084	0.00076
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00073	0.00073	0.00073
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00173	0.00174	0.00174
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00173	0.00174	0.00174

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)	-0.00074	-0.00075	-0.00075
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00074	-0.00074	-0.00074
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00156	-0.00156	-0.00156
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00156	-0.00156	-0.00156

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)	0.00085	0.00085	0.00077
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00074	0.00074	0.00074
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00160	0.00158	0.00157
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00160	0.00158	0.00157

SKY130_OSU_SC_12T_HS__BUFx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00279	1.10764
sky130_osu_sc_12T_hs__buf_2	0.00279	2.29838
sky130_osu_sc_12T_hs__buf_4	0.00278	4.58967
sky130_osu_sc_12T_hs__buf_6	0.00081	1.80000
sky130_osu_sc_12T_hs__buf_8	0.00279	8.98374
sky130_osu_sc_12T_hs__buf_l	0.00215	0.86464

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__buf_1	0.00000	0.01457	0.01457
sky130_osu_sc_12T_hs__buf_2	0.00000	0.02185	0.02854
sky130_osu_sc_12T_hs__buf_4	0.00000	0.03642	0.05648
sky130_osu_sc_12T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_12T_hs__buf_8	0.00000	0.06556	0.11237
sky130_osu_sc_12T_hs__buf_l	0.00000	0.22878	0.22878

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)**	0.04541	0.49456	5.70316
sky130_osu_sc_12T_hs__buf_2	**A->Y (RR)**	0.04698	0.41114	5.74629
sky130_osu_sc_12T_hs__buf_4	**A->Y (RR)**	0.06245	0.39202	6.02800
sky130_osu_sc_12T_hs__buf_8	**A->Y (RR)**	0.09336	0.41920	6.34255
sky130_osu_sc_12T_hs__buf_l	**A->Y (RR)**	0.04724	0.53765	5.96829

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)**	0.05145	0.45238	5.10806
sky130_osu_sc_12T_hs__buf_2	**A->Y (FF)**	0.06052	0.45129	5.40630
sky130_osu_sc_12T_hs__buf_4	**A->Y (FF)**	0.08611	0.48503	5.77936
sky130_osu_sc_12T_hs__buf_8	**A->Y (FF)**	0.13815	0.55322	6.17036
sky130_osu_sc_12T_hs__buf_l	**A->Y (FF)**	0.05351	0.45626	4.92938

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	0.00200	0.00178	0.00885
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00377	0.00368	0.01069
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.00786	0.00820	0.01585
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01617	0.01686	0.02437
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00161	0.00163	0.01635

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	0.00529	0.00557	0.01513
sky130_osu_sc_12T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00677	0.00715	0.01662
sky130_osu_sc_12T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01048	0.01114	0.02042
sky130_osu_sc_12T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.01848	0.01912	0.02819
sky130_osu_sc_12T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00423	0.00484	0.02171

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
	-0.00049	-0.00049	-0.00047

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
	0.00049	0.00049	0.00047

SKY130_OSU_SC_12T_HS__DFFRx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00255	0.00254	0.00820	1.19209	1.19682
sky130_osu_sc_12T_hs__dffr_l	0.00255	0.00254	0.00820	0.86036	0.85848

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffr_1	0.00000	0.16064	0.34526
sky130_osu_sc_12T_hs__dffr_l	0.00000	0.37486	0.55948

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RR)	0.24164	1.06599	11.65300
	QN->Q (FR)	0.02627	0.78105	12.80540
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RR)	0.23985	1.12072	11.03690
	QN->Q (FR)	0.02828	0.78101	11.74670

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->Q (RF)	0.24399	1.10429	12.49630
	QN->Q (RF)	0.01564	0.45312	7.45783
	RN->Q (FF)	0.18101	1.22929	15.44650
sky130_osu_sc_12T_hs__dffr_l	CK->Q (RF)	0.24666	1.20966	12.38600
	QN->Q (RF)	0.01690	0.46891	7.17723
	RN->Q (FF)	0.18395	1.33364	15.32450

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	CK->QN (RR)	0.22218	0.67918	5.94107
	RN->QN (FR)	0.15912	0.80432	8.89536
sky130_osu_sc_12T_hs__dffr_l	CK->QN (RR)	0.22079	0.72277	5.77494
	RN->QN (FR)	0.15798	0.84679	8.71479

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffr_1	**CK->QN (RF)**	0.20132	0.47131	2.52619
sky130_osu_sc_12T_hs__dffr_l	**CK->QN (RF)**	0.19837	0.48219	2.38569

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)	-0.03164	-0.05110	-0.15134
	setup	CK (R)	0.18176	0.21725	0.64668
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.03169	-0.05127	-0.15200
	setup	CK (R)	0.18247	0.21602	0.64882

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)	-0.11225	-0.32871	-4.77064
	setup	CK (R)	0.13132	0.33893	4.79059
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.11009	-0.33054	-4.77008
	setup	CK (R)	0.13212	0.33893	4.79072

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)	-0.03164	-0.05110	-0.15134
	setup	CK (R)	0.18176	0.21725	0.64668
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.03169	-0.05127	-0.15200
	setup	CK (R)	0.18247	0.21602	0.64882

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)	-0.11225	-0.32871	-4.77064
	setup	CK (R)	0.13132	0.33893	4.79059
sky130_osu_sc_12T_hs__dffr_l	hold	CK (R)	-0.11009	-0.33054	-4.77008
	setup	CK (R)	0.13212	0.33893	4.79072

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.16575	0.19602	0.78090
	removal	CK (R)	-0.02934	-0.03354	-0.04338
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.16593	0.19622	0.77872
	removal	CK (R)	-0.02953	-0.03735	-0.04356

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	recovery	CK (R)	0.16575	0.19602	0.78090
	removal	CK (R)	-0.02934	-0.03354	-0.04338
sky130_osu_sc_12T_hs__dffr_l	recovery	CK (R)	0.16593	0.19622	0.77872
	removal	CK (R)	-0.02953	-0.03735	-0.04356

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 ()	0.11473	0.36987	13.33370
	min_pulse_width	RN ()	0.11753	0.36987	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	RN ()	0.11473	0.36987	13.33370
	min_pulse_width	RN ()	0.11473	0.36987	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 ()	0.10351	0.36987	13.33370
	min_pulse_width	CK ()	0.12875	0.36987	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.09510	0.36987	13.33370
	min_pulse_width	CK ()	0.12594	0.36987	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffr_1	min_pulse_width	CK ()	0.24370	0.36987	13.33370
	min_pulse_width	CK ()	0.10632	0.36987	13.33370
sky130_osu_sc_12T_hs__dffr_l	min_pulse_width	CK ()	0.24370	0.36987	13.33370
	min_pulse_width	CK ()	0.10632	0.36987	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	0.00556	0.00402	0.00000
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00509	0.00398	0.00222

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	0.00620	0.00519	0.00000
	RN	-0.00071	-0.04530	-0.72527
	RN	0.01406	0.01328	0.00763
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00572	0.00499	0.00473
	RN	-0.00071	-0.03725	-0.52344
	RN	0.01358	0.01308	0.01312

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	0.00620	0.00520	0.00000
	RN	-0.00071	-0.04541	-0.72815
	RN	0.01406	0.01328	0.00758
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00572	0.00500	0.00477
	RN	-0.00071	-0.03720	-0.52230
	RN	0.01358	0.01309	0.01299

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	0.00553	0.00402	0.00000
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00506	0.00397	0.00207

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	-0.00125	-0.00145	-0.00146
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00697	0.00664	0.01154
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00275	0.00249	0.00749
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00125	-0.00145	-0.00146
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00698	0.00664	0.01155
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00275	0.00249	0.00749

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	0.00145	0.00147	0.00146
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00996	0.00973	0.01475
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00493	0.00473	0.00960
sky130_osu_sc_12T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00146	0.00147	0.00146
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00996	0.00973	0.01475
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00493	0.00474	0.00961

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)	0.00218	0.00200	0.01366
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00658	0.00621	0.01840
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)	0.00218	0.00200	0.01366
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.00659	0.00622	0.01840

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)	0.00562	0.00568	0.01786
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01080	0.01071	0.02319
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)	0.00562	0.00568	0.01786
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01081	0.01072	0.02320

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)	-0.00033	-0.00068	0.01100
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00360	0.00272	0.01469
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00036	-0.00070	0.01100
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00033	-0.00068	0.01100
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00360	0.00272	0.01470
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00035	-0.00070	0.01100

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)	0.00848	0.00847	0.02087
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01696	0.01657	0.03062
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01255	0.01241	0.02472
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01649	0.01648	0.03825
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00885	0.00880	0.02097
sky130_osu_sc_12T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00848	0.00847	0.02088
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.01697	0.01658	0.03062
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.01255	0.01241	0.02473
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.01650	0.01649	0.03826
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.00885	0.00880	0.02097

SKY130_OSU_SC_12T_HS__DFFSRx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00251	0.00255	0.00599	0.00833	1.23467	1.24577
sky130_osu_sc_12T_hs__dffsr_l	0.00251	0.00255	0.00600	0.00833	0.84570	0.85970

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_12T_hs__dffsr_1	0.00000	0.05169	0.07056
sky130_osu_sc_12T_hs__dffsr_l	0.00000	0.26590	0.28478

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RR)	0.26496	1.10145	11.93140
	QN->Q (FR)	0.02451	0.75160	12.41580
	RN->Q (RR)	0.21361	1.06076	11.96770
	SN->Q (FR)	0.20556	1.23815	15.21800
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RR)	0.26658	1.15231	10.95450
	QN->Q (FR)	0.02821	0.77686	11.62420
	RN->Q (RR)	0.21354	1.10968	10.98700
	SN->Q (FR)	0.20700	1.28913	14.24270

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->Q (RF)	0.27164	1.13269	12.65680
	QN->Q (RF)	0.01553	0.45786	7.59858
	RN->Q (FF)	0.19151	1.24186	15.61860
sky130_osu_sc_12T_hs__dffsr_l	CK->Q (RF)	0.27577	1.23273	12.19770
	QN->Q (RF)	0.01680	0.46571	7.10041
	RN->Q (FF)	0.19566	1.34015	15.14570

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RR)	0.24975	0.70350	5.96523
	RN->QN (FR)	0.16980	0.81298	8.92777
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RR)	0.24974	0.75580	5.82506
	RN->QN (FR)	0.16979	0.86384	8.77144

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffsr_1	CK->QN (RF)	0.22639	0.51364	2.77811
	RN->QN (RF)	0.17564	0.47368	2.81368
	SN->QN (FF)	0.16782	0.65134	6.07049
sky130_osu_sc_12T_hs__dffsr_l	CK->QN (RF)	0.22588	0.52274	2.50827
	RN->QN (RF)	0.17486	0.48305	2.54243
	SN->QN (FF)	0.16692	0.66004	5.79377

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)	-0.04010	-0.06188	-0.21532
	setup	CK (R)	0.20175	0.22613	0.71787
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.04022	-0.06202	-0.21662
	setup	CK (R)	0.20103	0.22597	0.71734

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)	-0.12079	-0.34292	-4.81583
	setup	CK (R)	0.14754	0.35186	4.83729
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12172	-0.34273	-4.81565
	setup	CK (R)	0.14752	0.35186	4.83788

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)	-0.04010	-0.06188	-0.21532
	setup	CK (R)	0.20175	0.22613	0.71787
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.04022	-0.06202	-0.21662
	setup	CK (R)	0.20103	0.22597	0.71734

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)	-0.12079	-0.34292	-4.81583
	setup	CK (R)	0.14754	0.35186	4.83729
sky130_osu_sc_12T_hs__dffsr_l	hold	CK (R)	-0.12172	-0.34273	-4.81565
	setup	CK (R)	0.14752	0.35186	4.83788

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.16464	0.18854	0.80970
	removal	CK (R)	-0.02571	-0.03185	-0.07940
	hold	SN (R)	-0.15933	-0.28662	-1.48822
	setup	SN (R)	0.18157	0.31976	3.44275
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.16450	0.18792	0.81380
	removal	CK (R)	-0.02571	-0.03185	-0.07940
	hold	SN (R)	-0.15669	-0.28300	-1.45952
	setup	SN (R)	0.18131	0.31610	3.36495

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	recovery	CK (R)	0.16464	0.18854	0.80970
	removal	CK (R)	-0.02571	-0.03185	-0.07940
	hold	SN (R)	-0.15933	-0.28662	-1.48822
	hold	SN (R)	-0.16044	-0.28902	-1.49014
	setup	SN (R)	0.18146	0.31769	3.25779
	setup	SN (R)	0.18157	0.31976	3.44275
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.16450	0.18792	0.81380
	removal	CK (R)	-0.02571	-0.03185	-0.07940
	hold	SN (R)	-0.15669	-0.28300	-1.46771
	hold	SN (R)	-0.15760	-0.28407	-1.45952
	setup	SN (R)	0.18131	0.31193	3.17436
	setup	SN (R)	0.17338	0.31610	3.36495

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 ()	0.13155	0.36987	13.33370
	min_pulse_width	RN ()	0.13716	0.36987	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	RN ()	0.13155	0.36987	13.33370
	min_pulse_width	RN ()	0.13435	0.36987	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)	0.02733	0.05591	2.74778
	removal	CK (R)	-0.00791	-0.03893	-0.21241
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.02752	0.05591	2.60658
	removal	CK (R)	-0.00791	-0.03893	-0.21241

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)	0.02733	0.05591	2.74778
	removal	CK (R)	-0.00791	-0.03893	-0.21241
sky130_osu_sc_12T_hs__dffsr_l	recovery	CK (R)	0.02752	0.05591	2.60658
	removal	CK (R)	-0.00791	-0.03893	-0.21241

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	SN ()	0.16800	0.36987	13.33370
	min_pulse_width	SN ()	0.17361	0.36987	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	SN ()	0.16800	0.36987	13.33370
	min_pulse_width	SN ()	0.16520	0.36987	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	CK ()	0.11753	0.36987	13.33370
	min_pulse_width	CK ()	0.14277	0.36987	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.11192	0.36987	13.33370
	min_pulse_width	CK ()	0.13996	0.36987	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffsr_1	min_pulse_width	CK ()	0.26333	0.36987	13.33370
	min_pulse_width	CK ()	0.12314	0.36987	13.33370
sky130_osu_sc_12T_hs__dffsr_l	min_pulse_width	CK ()	0.26333	0.36987	13.33370
	min_pulse_width	CK ()	0.12314	0.36987	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	0.00681	0.00529	-0.00344
	RN	0.01237	0.01095	-0.00396
	SN	-0.00071	-0.04627	-0.75117
	SN	0.01368	0.01213	-0.00509
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00638	0.00530	0.00352
	RN	0.01193	0.01096	0.00609
	SN	-0.00071	-0.03687	-0.51453
	SN	0.01324	0.01217	0.00518

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	0.00715	0.00639	0.00344
	RN	-0.00071	-0.04627	-0.75117
	RN	0.01481	0.01423	0.01139
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00668	0.00600	0.00588
	RN	-0.00071	-0.03687	-0.51453
	RN	0.01433	0.01384	0.01394

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	0.00716	0.00640	0.00344
	RN	-0.00071	-0.04652	-0.75792
	RN	0.01481	0.01423	0.01127
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00669	0.00600	0.00582
	RN	-0.00071	-0.03723	-0.52304
	RN	0.01434	0.01384	0.01374

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	0.00678	0.00525	-0.00344
	RN	0.01233	0.01092	-0.00422
	SN	-0.00071	-0.04652	-0.75789
	SN	0.01365	0.01211	-0.00508
sky130_osu_sc_12T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00634	0.00526	0.00313
	RN	0.01189	0.01093	0.00575
	SN	-0.00071	-0.03723	-0.52302
	SN	0.01320	0.01213	0.00497

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	-0.00143	-0.00148	-0.00147
	(!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)	0.00863	0.00833	0.01315
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00294	0.00269	0.00759
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00291	0.00267	0.00756
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00294	0.00270	0.00761
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00143	-0.00148	-0.00147
	(!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)	0.00863	0.00833	0.01315
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00294	0.00269	0.00759
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00291	0.00268	0.00756
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00295	0.00270	0.00761

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	0.00151	0.00148	0.00147
	(!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)	0.01147	0.01124	0.01591
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00539	0.00523	0.01002
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00542	0.00526	0.01003
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00537	0.00519	0.01000
sky130_osu_sc_12T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00151	0.00149	0.00147
	(!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)	0.01147	0.01125	0.01591
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00539	0.00523	0.01002
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00542	0.00526	0.01003
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00537	0.00521	0.01000

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)	0.00177	0.00157	0.01311
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00773	0.00729	0.01873
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)	0.00178	0.00157	0.01311
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.00773	0.00730	0.01874

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)	0.00613	0.00623	0.01848
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01143	0.01134	0.02349
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)	0.00613	0.00623	0.01848
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01143	0.01134	0.02349

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)	-0.00387	-0.00388	-0.00391
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00398	-0.00424	-0.00424
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00378	-0.00392	-0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00176	0.00156	0.00723
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)	-0.00387	-0.00389	-0.00391
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00398	-0.00425	-0.00424
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00378	-0.00393	-0.00390
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00176	0.00155	0.00723

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)	0.00391	0.00395	0.00392
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00422	0.00424	0.00424
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00390	0.00392	0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00922	0.00894	0.01348
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)	0.00391	0.00395	0.00392
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00423	0.00425	0.00424
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00390	0.00393	0.00391
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00922	0.00894	0.01348

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)	-0.00039	-0.00074	0.01091
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00422	0.00338	0.01531
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00416	0.00331	0.01525
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00026	-0.00061	0.01107
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00201	0.00144	0.02392
sky130_osu_sc_12T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00038	-0.00071	0.01092
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00422	0.00338	0.01531
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00416	0.00331	0.01525
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00026	-0.00060	0.01107
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00201	0.00144	0.02392

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)	0.01886	0.01851	0.03235
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00865	0.00866	0.02101
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01268	0.01255	0.02481
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01271	0.01257	0.02481
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01807	0.01798	0.03951
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00885	0.00878	0.02095
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01143	0.01149	0.03474
sky130_osu_sc_12T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.01886	0.01851	0.03236
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.00865	0.00866	0.02101
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.01268	0.01257	0.02481
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.01271	0.01257	0.02481
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.01807	0.01800	0.03951
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00885	0.00879	0.02095
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.01143	0.01145	0.03474

SKY130_OSU_SC_12T_HS__DFFSx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00253	0.00511	0.00814	1.19538	1.19269
sky130_osu_sc_12T_hs__dffs_l	0.00253	0.00511	0.00814	0.86125	0.86586

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dffs_1	0.00000	0.33902	0.94471
sky130_osu_sc_12T_hs__dffs_l	0.00000	0.55323	1.15892

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)	0.17538	0.98651	11.57520
	QN->Q (FR)	0.02625	0.77895	12.77400
	SN->Q (FR)	0.14604	1.14079	14.22350
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RR)	0.17664	1.04698	10.95260
	QN->Q (FR)	0.02823	0.78007	11.71890
	SN->Q (FR)	0.14761	1.19834	13.59170

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->Q (RF)	0.26233	1.12518	12.51810
	QN->Q (RF)	0.01557	0.45143	7.44195
sky130_osu_sc_12T_hs__dffs_l	CK->Q (RF)	0.26320	1.22723	12.39630
	QN->Q (RF)	0.01684	0.46739	7.16042

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dffs_1	CK->QN (RR)	0.24022	0.69815	5.91881
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RR)	0.23700	0.74266	5.83352

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)	0.14005	0.39448	2.42412
	SN->QN (FF)	0.11000	0.54809	5.07669
sky130_osu_sc_12T_hs__dffs_l	CK->QN (RF)	0.13959	0.41178	2.32739
	SN->QN (FF)	0.11003	0.56331	4.96890

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)	-0.02356	-0.04003	-0.12295
	setup	CK (R)	0.12694	0.16259	0.57540
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.02333	-0.03957	-0.12459
	setup	CK (R)	0.12609	0.16227	0.57672

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)	-0.11119	-0.33152	-4.80078
	setup	CK (R)	0.14075	0.34525	4.82189
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.11382	-0.33086	-4.80162
	setup	CK (R)	0.14067	0.34525	4.82189

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)	-0.02356	-0.04003	-0.12295
	setup	CK (R)	0.12694	0.16259	0.57540
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.02333	-0.03957	-0.12459
	setup	CK (R)	0.12609	0.16227	0.57672

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)	-0.11119	-0.33152	-4.80078
	setup	CK (R)	0.14075	0.34525	4.82189
sky130_osu_sc_12T_hs__dffs_l	hold	CK (R)	-0.11382	-0.33086	-4.80162
	setup	CK (R)	0.14067	0.34525	4.82189

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)	0.03200	0.06212	2.22745
	removal	CK (R)	-0.01425	-0.04867	-0.56778
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03199	0.06213	2.06604
	removal	CK (R)	-0.01425	-0.04867	-0.56778

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)	0.03200	0.06212	2.22745
	removal	CK (R)	-0.01425	-0.04867	-0.56778
sky130_osu_sc_12T_hs__dffs_l	recovery	CK (R)	0.03199	0.06213	2.06604
	removal	CK (R)	-0.01425	-0.04867	-0.56778

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 ()	0.10351	0.36987	13.33370
	min_pulse_width	SN ()	0.10632	0.36987	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	SN ()	0.10071	0.36987	13.33370
	min_pulse_width	SN ()	0.10071	0.36987	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 ()	0.06426	0.36987	13.33370
	min_pulse_width	CK ()	0.13435	0.36987	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.06426	0.36987	13.33370
	min_pulse_width	CK ()	0.13155	0.36987	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_12T_hs__dffs_1	min_pulse_width	CK ()	0.18482	0.36987	13.33370
	min_pulse_width	CK ()	0.11753	0.36987	13.33370
sky130_osu_sc_12T_hs__dffs_l	min_pulse_width	CK ()	0.18482	0.36987	13.33370
	min_pulse_width	CK ()	0.11753	0.36987	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	0.00556	0.00404	0.00000
	SN	-0.00071	-0.04538	-0.72727
	SN	0.01188	0.01082	0.00651
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00508	0.00399	0.00245
	SN	-0.00071	-0.03728	-0.52399
	SN	0.01139	0.01077	0.01564

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	0.00617	0.00521	0.00000
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00569	0.00500	0.00491

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	0.00617	0.00521	0.00000
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00570	0.00500	0.00483

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	0.00553	0.00401	0.00000
	SN	-0.00071	-0.04532	-0.72560
	SN	0.01184	0.01079	0.00647
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00505	0.00395	0.00221
	SN	-0.00071	-0.03739	-0.52677
	SN	0.01136	0.01074	0.01541

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	-0.00145	-0.00149	-0.00150
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00691	0.00657	0.01189
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00273	0.00248	0.00745
sky130_osu_sc_12T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00145	-0.00149	-0.00149
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00691	0.00658	0.01189
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00273	0.00248	0.00745

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	0.00154	0.00152	0.00150
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00992	0.00965	0.01455
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00496	0.00480	0.00969
sky130_osu_sc_12T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00154	0.00152	0.00151
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00992	0.00965	0.01455
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00496	0.00480	0.00969

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)	-0.00292	-0.00294	-0.00295
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00184	0.00161	0.01754
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)	-0.00291	-0.00293	-0.00294
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00184	0.00161	0.01755

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)	0.00297	0.00296	0.00295
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00660	0.00676	0.02403
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)	0.00296	0.00296	0.00295
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00660	0.00676	0.02403

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)	-0.00034	-0.00069	0.01101
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00030	-0.00064	0.01107
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00186	0.00131	0.02407
sky130_osu_sc_12T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00034	-0.00069	0.01101
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00030	-0.00064	0.01107
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00186	0.00132	0.02407

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)	0.01697	0.01665	0.03093
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00848	0.00851	0.02088
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01635	0.01625	0.03807
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00879	0.00874	0.02092
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01081	0.01095	0.03435
sky130_osu_sc_12T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.01697	0.01665	0.03093
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.00848	0.00851	0.02088
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.01635	0.01626	0.03807
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.00879	0.00875	0.02092
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.01081	0.01096	0.03436

SKY130_OSU_SC_12T_HS__DFFx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00268	0.00802	1.08472
sky130_osu_sc_12T_hs__dff_l	0.00268	0.00800	0.79499

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__dff_1	0.00000	0.04711	0.05818
sky130_osu_sc_12T_hs__dff_l	0.00000	0.26132	0.27239

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)	0.14865	0.61324	5.79886
sky130_osu_sc_12T_hs__dff_l	CK->Q (RR)	0.14902	0.65310	5.57559

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_12T_hs__dff_1	CK->Q (RF)	0.22658	0.46907	2.30316
sky130_osu_sc_12T_hs__dff_l	CK->Q (RF)	0.22714	0.49068	2.24501

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)	-0.02541	-0.03761	-0.15351
	setup	CK (R)	0.09891	0.14153	0.55075
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.02544	-0.03761	-0.15364
	setup	CK (R)	0.09863	0.14158	0.55180

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)	-0.09982	-0.32786	-4.78433
	setup	CK (R)	0.12223	0.33830	4.80282
sky130_osu_sc_12T_hs__dff_l	hold	CK (R)	-0.10058	-0.32786	-4.78438
	setup	CK (R)	0.12223	0.33830	4.80282

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 ()	0.05865	0.36987	13.33370
	min_pulse_width	CK ()	0.12033	0.36987	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.05585	0.36987	13.33370
	min_pulse_width	CK ()	0.11753	0.36987	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 ()	0.15959	0.36987	13.33370
	min_pulse_width	CK ()	0.09790	0.36987	13.33370
sky130_osu_sc_12T_hs__dff_l	min_pulse_width	CK ()	0.15678	0.36987	13.33370
	min_pulse_width	CK ()	0.09790	0.36987	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	0.01161	0.01069	0.02894
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01060	0.00973	0.02777

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	0.01248	0.01177	0.02374
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01153	0.01083	0.02265

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	-0.00124	-0.00144	-0.00145
	!CK	0.00000	0.00000	0.00000
	!CK	0.00602	0.00576	0.01077
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00124	-0.00144	-0.00145
	!CK	0.00000	0.00000	0.00000
	!CK	0.00603	0.00576	0.01077

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	0.00144	0.00146	0.00145
	!CK	0.00000	0.00000	0.00000
	!CK	0.01021	0.00989	0.01503
sky130_osu_sc_12T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00145	0.00146	0.00145
	!CK	0.00000	0.00000	0.00000
	!CK	0.01021	0.00990	0.01503

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)	-0.00036	-0.00071	0.01100
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00030	-0.00065	0.01109
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	-0.00036	-0.00071	0.01100
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	-0.00030	-0.00064	0.01109

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)	0.00845	0.00851	0.02087
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01610	0.01578	0.03028
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01653	0.01649	0.03835
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00873	0.00869	0.02088
sky130_osu_sc_12T_hs__dff_l	(D * Q)	0.00000	0.00000	0.00000
	(D * Q)	0.00845	0.00852	0.02087
	(D * !Q)	0.00000	0.00000	0.00000
	(D * !Q)	0.01610	0.01578	0.03028
	(!D * Q)	0.00000	0.00000	0.00000
	(!D * Q)	0.01653	0.01649	0.03835
	(!D * !Q)	0.00000	0.00000	0.00000
	(!D * !Q)	0.00873	0.00869	0.02088

SKY130_OSU_SC_12T_HS__INVx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00258	1.07701
sky130_osu_sc_12T_hs__inv_10	0.02278	10.91079
sky130_osu_sc_12T_hs__inv_2	0.00475	2.24335
sky130_osu_sc_12T_hs__inv_3	0.00702	3.27941
sky130_osu_sc_12T_hs__inv_4	0.00924	4.44093
sky130_osu_sc_12T_hs__inv_6	0.01382	6.61119
sky130_osu_sc_12T_hs__inv_8	0.01830	8.71218
sky130_osu_sc_12T_hs__inv_l	0.00211	0.76721

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__inv_1	0.00000	0.00728	0.01397
sky130_osu_sc_12T_hs__inv_10	0.00000	0.07284	0.13971
sky130_osu_sc_12T_hs__inv_2	0.00000	0.01457	0.02794
sky130_osu_sc_12T_hs__inv_3	0.00000	0.02185	0.04191
sky130_osu_sc_12T_hs__inv_4	0.00000	0.02914	0.05588
sky130_osu_sc_12T_hs__inv_6	0.00000	0.04371	0.08383
sky130_osu_sc_12T_hs__inv_8	0.00000	0.05828	0.11177
sky130_osu_sc_12T_hs__inv_l	0.00000	0.11439	0.22862

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)**	0.02523	0.71308	11.40620
sky130_osu_sc_12T_hs__inv_10	**A->Y (FR)**	0.03003	0.46958	11.47240
sky130_osu_sc_12T_hs__inv_2	**A->Y (FR)**	0.01832	0.60054	11.37540
sky130_osu_sc_12T_hs__inv_3	**A->Y (FR)**	0.01979	0.56084	11.40050
sky130_osu_sc_12T_hs__inv_4	**A->Y (FR)**	0.01961	0.52872	11.38230
sky130_osu_sc_12T_hs__inv_6	**A->Y (FR)**	0.02212	0.49802	11.38670
sky130_osu_sc_12T_hs__inv_8	**A->Y (FR)**	0.02574	0.47936	11.35630
sky130_osu_sc_12T_hs__inv_l	**A->Y (FR)**	0.02834	0.72496	10.61640

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)**	0.01407	0.38493	6.09746
sky130_osu_sc_12T_hs__inv_10	**A->Y (RF)**	0.01922	0.23336	6.42731
sky130_osu_sc_12T_hs__inv_2	**A->Y (RF)**	0.01135	0.33019	6.28252
sky130_osu_sc_12T_hs__inv_3	**A->Y (RF)**	0.01236	0.30550	6.37398
sky130_osu_sc_12T_hs__inv_4	**A->Y (RF)**	0.01227	0.28318	6.39451
sky130_osu_sc_12T_hs__inv_6	**A->Y (RF)**	0.01464	0.25958	6.42281
sky130_osu_sc_12T_hs__inv_8	**A->Y (RF)**	0.01691	0.24366	6.40699
sky130_osu_sc_12T_hs__inv_l	**A->Y (RF)**	0.01580	0.41144	6.01211

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	0.00261	0.00271	0.00417
sky130_osu_sc_12T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.02084	0.02267	0.03763
sky130_osu_sc_12T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.00442	0.00428	0.00758
sky130_osu_sc_12T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.00681	0.00713	0.01167
sky130_osu_sc_12T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.00865	0.00870	0.01502
sky130_osu_sc_12T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.01274	0.01426	0.02252
sky130_osu_sc_12T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.01679	0.01853	0.03008
sky130_osu_sc_12T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00213	0.00237	0.00628

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	-0.00039	-0.00040	0.00017
sky130_osu_sc_12T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.00734	-0.00676	-0.00040
sky130_osu_sc_12T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00137	-0.00132	-0.00017
sky130_osu_sc_12T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00176	-0.00167	0.00009
sky130_osu_sc_12T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00282	-0.00265	-0.00024
sky130_osu_sc_12T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.00430	-0.00399	-0.00031
sky130_osu_sc_12T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.00584	-0.00523	-0.00035
sky130_osu_sc_12T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00030	-0.00032	0.00015

SKY130_OSU_SC_12T_HS__MUX2

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.21898	0.21893	0.00533	0.21727

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__mux2_1	0.00000	0.01478	0.01478

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)	-	0.00843	0.14351	1.15400
	A1->Y (RR)	-	0.01018	0.14614	1.15245
	S0->Y (RR)	(!A0 * A1)	0.03138	0.18905	0.22181
	S0->Y (FR)	(A0 * !A1)	0.02738	0.34939	3.36287

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)	-	0.01067	0.17504	1.64017
	A1->Y (FF)	-	0.00961	0.17259	1.63639
	S0->Y (FF)	(!A0 * A1)	0.05137	0.32659	2.70431
	S0->Y (RF)	(A0 * !A1)	0.01584	0.18421	1.08392

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	-	-0.00273	-0.00273	-0.00273
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00168	-0.00169	-0.00169
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00356	0.00381	0.01682
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00160	-0.00180	0.01072

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	-	0.00273	0.00273	0.00273
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00169	0.00169	0.00169
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00047	0.00031	0.01310
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.00718	0.00734	0.02000

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)	-0.00064	-0.00064	-0.00064

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)	0.00064	0.00064	0.00064

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00077	-0.00077	-0.00077

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00077	0.00077	0.00078

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)	-0.00058	-0.00075	0.01196
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00056	-0.00075	0.01196

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)	0.00550	0.00563	0.01845
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.00524	0.00540	0.01840

SKY130_OSU_SC_12T_HS__NAND2x

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00256	0.00257	1.06944
sky130_osu_sc_12T_hs__nand2_l	0.00207	0.00210	0.76356

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nand2_1	0.00000	0.00728	0.02794
sky130_osu_sc_12T_hs__nand2_l	0.00000	0.11441	0.45724

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)	0.02630	0.71508	11.40420
	B->Y (FR)	0.03008	0.68437	10.87690
sky130_osu_sc_12T_hs__nand2_l	A->Y (FR)	0.02862	0.72509	10.60670
	B->Y (FR)	0.03500	0.72980	10.58880

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)	0.01916	0.46275	7.30313
	B->Y (RF)	0.02219	0.44926	6.96485
sky130_osu_sc_12T_hs__nand2_l	A->Y (RF)	0.02156	0.49821	7.24149
	B->Y (RF)	0.02456	0.48554	6.90226

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	0.00276	0.00284	0.00418
	B	0.00000	0.00000	0.00000
	B	0.00359	0.00364	0.00506
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00216	0.00240	0.00585
	B	0.00000	0.00000	0.00000
	B	0.00279	0.00298	0.00650

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	-0.00022	-0.00026	0.00026
	B	0.00000	0.00000	0.00000
	B	-0.00021	-0.00027	0.00008
sky130_osu_sc_12T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00014	-0.00018	0.00024
	B	0.00000	0.00000	0.00000
	B	-0.00014	-0.00018	0.00008

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)	-0.00174	-0.00176	-0.00176
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00126	-0.00127	-0.00128

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)	0.00175	0.00177	0.00176
sky130_osu_sc_12T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00127	0.00128	0.00128

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)	-0.00159	-0.00160	-0.00159
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00116	-0.00117	-0.00117

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)	0.00164	0.00161	0.00160
sky130_osu_sc_12T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00120	0.00117	0.00117

SKY130_OSU_SC_12T_HS__NOR2x

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00253	0.00280	0.58867
sky130_osu_sc_12T_hs__nor2_l	0.00198	0.00220	0.43727

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__nor2_1	0.00000	0.00544	0.01397
sky130_osu_sc_12T_hs__nor2_l	0.00000	0.07555	0.22862

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)	0.05726	0.88355	11.63790
	B->Y (FR)	0.04596	0.85524	11.44700
sky130_osu_sc_12T_hs__nor2_l	A->Y (FR)	0.05969	0.91928	11.12670
	B->Y (FR)	0.05101	0.87554	10.70290

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)	0.01753	0.31514	4.07771
	B->Y (RF)	0.01486	0.30887	4.06547
sky130_osu_sc_12T_hs__nor2_l	A->Y (RF)	0.01863	0.34267	4.16816
	B->Y (RF)	0.01649	0.33735	4.15779

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	0.00358	0.00350	0.00404
	B	0.00000	0.00000	0.00000
	B	0.00287	0.00292	0.00494
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00270	0.00264	0.00376
	B	0.00000	0.00000	0.00000
	B	0.00224	0.00235	0.00723

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	0.00040	0.00030	0.00108
	B	0.00000	0.00000	0.00000
	B	-0.00031	-0.00029	0.00048
sky130_osu_sc_12T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00029	0.00023	0.00089
	B	0.00000	0.00000	0.00000
	B	-0.00020	-0.00019	0.00044

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)	-0.00124	-0.00147	-0.00147
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00081	-0.00100	-0.00102

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)	0.00146	0.00147	0.00147
sky130_osu_sc_12T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00102	0.00103	0.00103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00074	-0.00074	-0.00074
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00053	-0.00054	-0.00053

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00078	0.00078	0.00075
sky130_osu_sc_12T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00055	0.00056	0.00054

SKY130_OSU_SC_12T_HS__OAI21

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
Temp -40.00

Truth Table

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

Footprint

Cell Name	Area
sky130_osu_sc_12T_hs__oai21_l	8.30280

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_12T_hs__oai21_l	0.00257	0.00267	0.00231	0.58186

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai21_l	0.00000	0.08866	0.24259

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)	0.06636	0.87428	11.42970
	A1->Y (FR)	0.08063	0.90695	11.61490
	B0->Y (FR)	0.03504	0.65700	9.10977

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)	0.02700	0.36810	4.68370
	A1->Y (RF)	0.03019	0.36783	4.63118
	B0->Y (RF)	0.02100	0.39646	5.24869

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	0.00409	0.00406	0.00594
	A1	0.00000	0.00000	0.00000
	A1	0.00484	0.00473	0.00522
	B0	0.00320	0.00336	0.00932

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00023	0.00020	0.00065
	A1	0.00000	0.00000	0.00000
	A1	0.00096	0.00083	0.00129
	B0	0.00045	0.00042	0.00120

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)	-0.00074	-0.00076	-0.00074
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00146	-0.00149	-0.00150
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00152	-0.00153	-0.00152

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)	0.00078	0.00079	0.00076
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00149	0.00149	0.00150
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00154	0.00153	0.00153

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)	-0.00119	-0.00140	-0.00141
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00144	-0.00147	-0.00148
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00150	-0.00150	-0.00150

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)	0.00140	0.00141	0.00141
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00147	0.00148	0.00148
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00151	0.00152	0.00150

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)	-0.00133	-0.00134	-0.00136

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)	0.00136	0.00138	0.00137

SKY130_OSU_SC_12T_HS__OAI22

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00241	0.00253	0.00270	0.00267	0.61410

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__oai22_l	0.00000	0.00813	0.02794

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)	0.08440	0.89938	11.63150
	A1->Y (FR)	0.07356	0.87034	11.46250
	B0->Y (FR)	0.04862	0.84756	11.44460
	B1->Y (FR)	0.06074	0.87558	11.61020

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)	0.03996	0.39451	4.89548
	A1->Y (RF)	0.03355	0.38510	4.87079
	B0->Y (RF)	0.02780	0.41410	5.44946
	B1->Y (RF)	0.03466	0.42611	5.51508

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	0.00609	0.00599	0.00646
	A1	0.00535	0.00532	0.00715
	B0	0.00379	0.00380	0.00559
	B1	0.00459	0.00447	0.00495

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__oai22_l	A0	0.00139	0.00127	0.00171
	A1	0.00074	0.00069	0.00111
	B0	-0.00007	-0.00007	0.00065
	B1	0.00139	0.00128	0.00194

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)	-0.00122	-0.00143	-0.00143
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00122	-0.00143	-0.00143
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00139	-0.00143	-0.00143
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00145	-0.00145	-0.00145

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)	0.00142	0.00144	0.00143
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00142	0.00144	0.00143
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00142	0.00144	0.00143
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00145	0.00146	0.00145

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)	-0.00072	-0.00072	-0.00072
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00072	-0.00072	-0.00072
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00139	-0.00142	-0.00142
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00144	-0.00145	-0.00144

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)	0.00076	0.00076	0.00073
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00076	0.00076	0.00073
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00141	0.00142	0.00142
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00145	0.00145	0.00145

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)	-0.00073	-0.00073	-0.00073
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00073	-0.00073	-0.00073
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00168	-0.00172	-0.00171
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00169	-0.00170	-0.00174

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)	0.00077	0.00077	0.00074
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00077	0.00077	0.00074
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00171	0.00173	0.00171
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00174	0.00176	0.00174

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)	-0.00121	-0.00142	-0.00142
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00121	-0.00142	-0.00142
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00171	-0.00176	-0.00175
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00172	-0.00174	-0.00177

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)	0.00141	0.00142	0.00142
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00141	0.00142	0.00142
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00176	0.00177	0.00175
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00177	0.00179	0.00178

SKY130_OSU_SC_12T_HS__OR2x

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00288	0.00264	1.10774
sky130_osu_sc_12T_hs__or2_2	0.00288	0.00264	2.30508
sky130_osu_sc_12T_hs__or2_4	0.00288	0.00264	4.52460
sky130_osu_sc_12T_hs__or2_8	0.00288	0.00265	8.85769
sky130_osu_sc_12T_hs__or2_l	0.00224	0.00209	0.80528

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__or2_1	0.00000	0.00938	0.01517
sky130_osu_sc_12T_hs__or2_2	0.00000	0.01332	0.02914
sky130_osu_sc_12T_hs__or2_4	0.00000	0.02120	0.05708
sky130_osu_sc_12T_hs__or2_8	0.00000	0.03697	0.11296
sky130_osu_sc_12T_hs__or2_l	0.00000	0.13283	0.22895

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)	0.05087	0.51618	5.67396
	B->Y (RR)	0.04631	0.49989	5.67436
sky130_osu_sc_12T_hs__or2_2	A->Y (RR)	0.05303	0.43235	5.76177
	B->Y (RR)	0.04816	0.41704	5.75577
sky130_osu_sc_12T_hs__or2_4	A->Y (RR)	0.06867	0.40742	5.96010
	B->Y (RR)	0.06370	0.39494	5.94602
sky130_osu_sc_12T_hs__or2_8	A->Y (RR)	0.09958	0.43169	6.33607
	B->Y (RR)	0.09449	0.42255	6.31074
sky130_osu_sc_12T_hs__or2_l	A->Y (RR)	0.05368	0.57065	5.72147
	B->Y (RR)	0.04967	0.55514	5.82335

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)	0.09881	0.53606	5.46567
	B->Y (FF)	0.08162	0.50299	5.35804
sky130_osu_sc_12T_hs__or2_2	A->Y (FF)	0.11826	0.54268	5.81681
	B->Y (FF)	0.10135	0.51584	5.65966
sky130_osu_sc_12T_hs__or2_4	A->Y (FF)	0.16690	0.59343	6.19031
	B->Y (FF)	0.15005	0.57045	6.00352
sky130_osu_sc_12T_hs__or2_8	A->Y (FF)	0.26604	0.70649	6.69071
	B->Y (FF)	0.24920	0.68102	6.48362
sky130_osu_sc_12T_hs__or2_l	A->Y (FF)	0.10406	0.53751	5.07187
	B->Y (FF)	0.08877	0.50427	4.99735

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	0.00280	0.00245	0.00717
	B	0.00000	0.00000	0.00000
	B	0.00213	0.00208	0.00896
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00460	0.00445	0.00924
	B	0.00000	0.00000	0.00000
	B	0.00389	0.00411	0.01086
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.00870	0.00891	0.01474
	B	0.00000	0.00000	0.00000
	B	0.00799	0.00866	0.01624
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.01709	0.01769	0.02379
	B	0.00000	0.00000	0.00000
	B	0.01626	0.01745	0.02513
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00220	0.00203	0.00719
	B	0.00000	0.00000	0.00000
	B	0.00173	0.00180	0.01246

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	0.00630	0.00600	0.01001
	B	0.00000	0.00000	0.00000
	B	0.00534	0.00563	0.01565
sky130_osu_sc_12T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.00780	0.00771	0.01155
	B	0.00000	0.00000	0.00000
	B	0.00683	0.00727	0.01677
sky130_osu_sc_12T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.01169	0.01179	0.01540
	B	0.00000	0.00000	0.00000
	B	0.01073	0.01122	0.01999
sky130_osu_sc_12T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.02111	0.01979	0.02332
	B	0.00000	0.00000	0.00000
	B	0.02014	0.01915	0.02736
sky130_osu_sc_12T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00485	0.00470	0.01037
	B	0.00000	0.00000	0.00000
	B	0.00419	0.00471	0.01973

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)	-0.00126	-0.00147	-0.00148
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00126	-0.00148	-0.00148
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00127	-0.00148	-0.00148
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00126	-0.00148	-0.00148
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00081	-0.00102	-0.00102

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)	0.00147	0.00149	0.00148
sky130_osu_sc_12T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00147	0.00148	0.00148
sky130_osu_sc_12T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00148	0.00149	0.00148
sky130_osu_sc_12T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00148	0.00150	0.00148
sky130_osu_sc_12T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00103	0.00103	0.00103

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00074	-0.00076	-0.00074
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00074	-0.00076	-0.00074
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00074	-0.00076	-0.00074
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00074	-0.00076	-0.00074
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00051	-0.00052	-0.00052

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00078	0.00079	0.00076
sky130_osu_sc_12T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00078	0.00079	0.00076
sky130_osu_sc_12T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00078	0.00079	0.00076
sky130_osu_sc_12T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00078	0.00079	0.00076
sky130_osu_sc_12T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00054	0.00055	0.00053

SKY130_OSU_SC_12T_HS__TBUFIx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00277	0.00370	0.60921
sky130_osu_sc_12T_hs__tbufi_l	0.00221	0.00295	0.42492

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tbufi_1	0.00000	0.00755	0.02794
sky130_osu_sc_12T_hs__tbufi_l	0.00000	0.11452	0.45724

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)	0.04210	0.83463	11.38450
	OE->Y (FR)	0.03862	0.26157	4.59464
	OE->Y (RR)	0.06462	0.62959	5.96171
sky130_osu_sc_12T_hs__tbufi_l	A->Y (FR)	0.04895	0.86302	10.50940
	OE->Y (FR)	0.03884	0.26126	4.59466
	OE->Y (RR)	0.06922	0.69834	6.05567

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)	0.01866	0.37628	5.04424
	OE->Y (FF)	0.03934	0.26154	4.59464
	OE->Y (RF)	0.01857	0.35954	4.76798
sky130_osu_sc_12T_hs__tbufi_l	A->Y (RF)	0.02123	0.40316	4.95322
	OE->Y (FF)	0.03964	0.26127	4.59464
	OE->Y (RF)	0.02094	0.38552	4.68779

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	0.00267	0.00254	0.00457
	OE	0.00000	0.00000	0.00000
	OE	0.00255	0.00246	0.01359
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00210	0.00218	0.00665
	OE	0.00000	0.00000	0.00000
	OE	0.00192	0.00204	0.01950

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00031	-0.00030	0.00039
	OE	0.00000	0.00000	0.00000
	OE	0.00164	0.00153	0.01451
sky130_osu_sc_12T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00019	-0.00020	0.00039
	OE	0.00000	0.00000	0.00000
	OE	0.00117	0.00132	0.02051

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)	-0.00130	-0.00131	-0.00130
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00119	-0.00121	-0.00119
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00095	-0.00095	-0.00095
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00088	-0.00088	-0.00088

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)	0.00130	0.00131	0.00130
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00122	0.00123	0.00120
sky130_osu_sc_12T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00095	0.00095	0.00095
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00089	0.00089	0.00088

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)	0.00094	0.00093	0.01408
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00084	0.00080	0.01397
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00069	0.00089	0.02042
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00059	0.00077	0.02032

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)	0.00324	0.00344	0.01662
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00330	0.00354	0.01668
sky130_osu_sc_12T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00256	0.00310	0.02273
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00257	0.00314	0.02278

SKY130_OSU_SC_12T_HS__TNBUFIx

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00277	0.00400	0.61151
sky130_osu_sc_12T_hs__tnbufi_l	0.00211	0.00314	0.43735

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__tnbufi_1	0.00000	0.01201	0.01457
sky130_osu_sc_12T_hs__tnbufi_l	0.00000	0.19067	0.22879

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)	0.04248	0.83579	11.41040
	OE->Y (RR)	0.01832	0.26127	4.59483
	OE->Y (FR)	0.05119	0.86543	11.58150
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (FR)	0.04802	0.87197	10.69730
	OE->Y (RR)	0.02033	0.26107	4.59461
	OE->Y (FR)	0.05471	0.91516	11.11260

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)	0.01823	0.37666	5.05733
	OE->Y (RF)	0.01811	0.26127	4.59479
	OE->Y (FF)	0.04260	0.41133	4.33371
sky130_osu_sc_12T_hs__tnbufi_l	A->Y (RF)	0.02008	0.40663	5.04943
	OE->Y (RF)	0.02012	0.26105	4.59459
	OE->Y (FF)	0.04720	0.41246	3.97840

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	0.00278	0.00266	0.00468
	OE	0.00000	0.00000	0.00000
	OE	0.00659	0.00693	0.02042
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00216	0.00219	0.00666
	OE	0.00000	0.00000	0.00000
	OE	0.00519	0.00592	0.02570

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	-0.00046	-0.00044	0.00025
	OE	0.00000	0.00000	0.00000
	OE	0.00581	0.00636	0.01775
sky130_osu_sc_12T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00035	-0.00034	0.00023
	OE	0.00000	0.00000	0.00000
	OE	0.00457	0.00537	0.02353

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)	-0.00105	-0.00106	-0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00095	-0.00097	-0.00096
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00073	-0.00074	-0.00073
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00066	-0.00067	-0.00066

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

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_12T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00105	0.00106	0.00105
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00098	0.00098	0.00096
sky130_osu_sc_12T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00073	0.00074	0.00073
	(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__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00157	-0.00182	0.01160
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00156	-0.00180	0.01161
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00106	-0.00103	0.01858
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00111	-0.00105	0.01856

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)	0.00499	0.00542	0.01895
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00492	0.00560	0.01890
sky130_osu_sc_12T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00398	0.00495	0.02451
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00393	0.00469	0.02448

SKY130_OSU_SC_12T_HS__XNOR2

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00556	0.00467	0.63406

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xnor2_l	0.00000	0.02518	0.04251

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	0.08320	0.66452	6.16917
	A->Y (FR)	!B	0.05589	0.85534	11.52930
	B->Y (RR)	A	0.06774	0.64815	6.16063
	B->Y (FR)	!A	0.06899	0.88216	11.69870

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	0.06614	0.46529	4.61190
	A->Y (RF)	!B	0.02593	0.37150	4.90952
	B->Y (FF)	A	0.06116	0.46057	4.61312
	B->Y (RF)	!A	0.02942	0.37763	4.91259

Power Information

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

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_12T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00273	0.00251	0.01385
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00677	0.00696	0.02191
	B	A	0.00000	0.00000	0.00000
	B	A	0.00134	0.00133	0.01445
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00703	0.00719	0.02067

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	0.00810	0.00811	0.02086
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00195	0.00179	0.01496
	B	A	0.00000	0.00000	0.00000
	B	A	0.00735	0.00764	0.02079
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00256	0.00237	0.01553

SKY130_OSU_SC_12T_HS__XOR2

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.00557	0.00472	0.58835

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_12T_hs__xor2_1	0.00000	0.02518	0.04022

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	0.08933	0.67166	6.10830
	A->Y (FR)	B	0.07269	0.89646	11.66790
	B->Y (RR)	!A	0.07269	0.66534	6.11466
	B->Y (FR)	A	0.07864	0.90250	11.66150

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	0.06807	0.46331	4.38700
	A->Y (RF)	B	0.02455	0.38294	4.93455
	B->Y (FF)	!A	0.06365	0.45755	4.45391
	B->Y (RF)	A	0.02887	0.36853	4.66713

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	0.00791	0.00799	0.02126
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00183	0.00114	0.01363
	B	A	0.00000	0.00000	0.00000
	B	A	0.00797	0.00814	0.02123
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00129	0.00121	0.01409

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	0.00160	0.00128	0.01450
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00860	0.00886	0.01995
	B	A	0.00000	0.00000	0.00000
	B	A	0.00162	0.00135	0.01413
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00743	0.00780	0.02062

SKY130_OSU_SC_12T_HS_x

sky130_osu_sc_12T_hs_ff_1P56_-40C.ccs
Cell Library: Process , Voltage 1.56,
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	0.31659
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	128383.00000	256766.00000
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
	-0.00121	0.02275	0.39471

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
	2.23521	2.14031	0.49305